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EDITORIAL.

MANY circumstances contributed to the success of the meeting of the American Pharmaceutical Association, lately held at Niagara Falls, a report of which will be found elsewhere in this issue. The address of the President was more than usually interesting, and we regret that, on account of its length, we are not able to reproduce it entire. The papers read were eminently practical and some of them evinced much labor devoted to their production. The result of delegating executive business in a large degree, and the arrangement of entertainments entirely, to special committees, proved in practice to be wise and satisfactory; the disappointments attending the latter feature of the meeting were undoubtedly owing less to the lack of forethought on the part of the Committee than to the shortcomings of the hotel proprietors, and with the experience of this first effort before the Committee, they are not likely to be repeated. The exhibition was of unusual extent, and excited much interest. We shall be better able to do justice to its merits in our next number than at present.

The Association is especially fortunate in the choice of its next place of meeting, as regards accessibility to its members and the number of objects and places of interest for their entertainment.

IT appears to be the custom of late, with the secular press, when the supply of news is short, to publish some ridiculous *canard* about the doings of druggists or doctors, and thereby originate a controversy which reaches through several issues of their publications. The ingenuity of the scheme is much like that exhibited when items of a more personal character are published for the sake of subsequent contradiction. One of the latest of this sort was the charge, in a Philadelphia paper, that apothecaries systematically furnish inferior articles or short weight where expensive remedies are prescribed. The evidence of this was the assertion, by a comparatively unknown medical man, that he had analyzed quinine pills *with a microscope*, and found them deficient in quinine.

It is always a question, in such cases, whether the statement is worthy of refutation, but in the present instance the rejoinder made by a well-known Philadelphia pharmacist was so forcible and conclusive, that no one can fail to appreciate the groundless character of the charge, as applied to pharmacists generally. That some men without honest principles *do* exist in the drug trade, is quite as true as the fact that they are found in other vocations. We believe that it is equally certain that there is no profession or trade that would more gladly aid every legitimate effort to lessen the number of this class than the pharmacists. No better evidence of this need be mentioned than the efforts now being made in every part of this country, to secure and enforce legal measures for limiting the practice of pharmacy to those who possess the requisite knowledge of its requirements. It is true that the only feasible standard—that of education—will not entirely prevent the licensing of unprincipled and dishonest men, but it will prevent it, in some degree, and the natural tendency of pharmacists to form associations in those States where pharmaceutical laws exists, and of individuals to wish for honorable distinction among their fellows, will surely encourage honest business methods among them.

IN connection with the foregoing, we ask attention to the mistake that is usually made when such controversies are undertaken, viz., of publishing them in special journals, instead of such as are seen by the public generally. When a question of public interest concerning the practice of pharmacy arises, the place to discuss it is in the public journals, and not, as is too often the practice, in pharmaceutical societies and publications, where the public never hear or see it. If half of the discussion relative to legal restriction of the practice of pharmacy that has taken place during five years past had been carried on in public prints instead of those seen by the better class of pharmacists only, fewer difficulties, we think, would have been met in some States in convincing legislators that such laws are demanded in the interests of the public.

[ORIGINAL COMMUNICATION.]

On the Poisonous Constituent of Andromeda Japonica Thunberg.

BY PROF. J. F. EYKMAN.*

AMONG the many plants belonging to the nat. fam. Ericaceæ and the genus Andromeda, indigenous to Japan and China, is Andromeda japonica Thunberg, an arboraceous shrub, commonly regarded as poisonous by the Japanese, and mentioned as such even in the oldest Japanese works on natural history. The investigation of this plant appeared to be very interesting, from a toxicological point of view, since the natural family of Ericaceæ furnishes only a limited number of poisons, and those but little known.

What is recorded in the Japanese or Chinese literature, regarding this plant, may be comprised in the following:

The oblong, bitter, and astringent leaves are poisonous and have a stupefying or deadly effect upon horses and cows which eat them. Hence the plant is named *basuiboku*, *'makuwasu*, also *shikaku kuwasu* and *sishi kuwasu*.†

A decoction of the leaves kills insects and worms, also the pediculus capitis.‡ It is used as a wash in ulcerations and in scabies, and as an antidote against *fugu*.§ The finely-powdered leaves are used as a remedy in snake-bite; and the odor of a decoction of the leaves causes headache to human beings.‖

The plant grows everywhere upon the mountains, is evergreen, and is, for this reason, used as an ornamental plant. It reaches a height not exceeding seven, and usually only two meters. A whole series of names are used for it in the different provinces; they are chiefly recorded in the Honzokomoku keimo of Ono.¶

Of these, *asebu* and *basuiboku* are the Chinese names most in use; *shin-boku* and *tin-shu-kwa* are names given from the globular form of the flower; ** and *bei-han-kwa*, †† from the resemblance of the flower to boiled rice.

E. Kaempfer, in his *Amœnitates Exoticæ*, ‡‡ describes this plant already in a somewhat detailed manner, under the names *asjebo* and *asjemi;* but Thunberg was the first who gave a complete description, besides a good illustration of the flowering plant.§§

The poisonous principle is extracted from the fresh leaves in the following manner:

The leaves are infused with water, and the strained liquid evaporated on a steam-bath to a thin syrup. The latter, which has a brownish-red color, is filtered and then shaken, several times in succession, with chloroform. The chloroformic solution, which has a faint greenish-yellow color, is reduced, by distillation, to a small volume, and petroleum ether added to the residue, until nothing further is thrown down by it. The separated amorphous substance is dried, and then dissolved in ether containing alcohol; this solution is shaken with water, the watery liquid, which is almost entirely colorless, separated from the yellow ethereal layer, and evaporated at a moderate heat. There is left, as residue, a soft, light-yellow, amorphous mass, which, by a gentle heat, dries up to a transparent substance, colorless in thin layers. I have tried, in various ways and by using different solvents, to cause this substance to crystallize, but at no time could there be observed even a trace of crystals. The substance is always obtained in the same condition, so that I considered myself justified in assuming to have under my hand a pure, homogenous substance. In addition to the above treatment, the powdered substance was thoroughly extracted with petroleum ether, and afterwards with benzol, the residuary powder again dissolved in ether mixed with some alcohol, and the colorless solution once more shaken with water. Upon evaporation of the aqueous liquid, at a moderate temperature, there was again obtained an amorphous substance of precisely the same properties as before. After having been partially dried on the water-bath, it was reduced to powder, and the latter subjected to ultimate analysis (I. and II.). Another portion was partially extracted with absolute ether (free from alcohol) in which it is only slightly soluble, and thus divided into two fractions. Analyses were also made both of the fraction left undissolved by the ether (III.), and of that which the latter had dissolved and left behind on evaporation (IV.).

I obtained the following results:

I. 0.2732 *gm.*, dried at 110° to 115° C., yielded 0.2631 *gm.* of dry substance, and after combustion, 0.5815 *gm.* of CO_2 and 0.1983 *gm.* of H_2O.

II. 0.3288 *gm.*, dried at 110° to 115° C., yielded 0.3181 *gm.*, and after combustion, 0.7073 *gm.* of CO_2 and 0.2087 *gm.* of H_2O.

III. 0.3575 *gm.* of the fraction left undissolved by ether, after being dried at 110° to 115° C., yielded 0.7929 *gm.* CO_2 and 0.2368 *gm.* H_2O.

IV. 0.3898 *gm.* of the fraction dissolved by ether, after being dried at 110° to 115° C., yielded 0.8651 *gm.* of CO_2 and 0.2610 *gm.* of H_2O.

These results, expressed in percentage, calculated upon the *dry* substance, represent:

	I.	II.	III.	IV.	MEAN.
Carbon (C = 12)..	60.28	60.64	60.49	60.52	60.48
Hydrogen (H = 1)	7.53	7.29	7.36	7.44	7.405
Oxygen (O = 16)..	32.19	32.17	32.15	32.04	32.115
	100.00	100.10	100.00	100.00	100 000

The agreement of the figures under III. and IV. among themselves and also with those under I. and II. confirm the belief that we have here a homogeneous definite principle, and not a mere mixture.

I have chosen the name *asebotoxin* for the substance.

Properties of Asebotoxin. It is a colorless substance, soft while moist, but brittle and transparent when dried at a gentle heat. When covered with water, it cakes together, becomes soft below 100° C., but does not melt until the temperature 126° C. is reached, and then forms a transparent light-brown mass. It is only slightly soluble in cold, more readily in hot water, and very easily in alcohol, amylic alcohol, glacial acetic acid, and chloroform. These solutions have a neutral reaction. Ether, free from alcohol or water, dissolves it but sparingly; but it is readily soluble in ether mixed with alcohol. Petroleum ether, benzol, and disulphide of carbon do not dissolve it at all, or only in very small quantity.

Water of ammonia dissolves it tolerably well, solution of soda less easily. The watery solution is neither precipitated nor altered by ferric chloride, sulphate of copper, mercuric chloride, chloride of gold, nitrate of silver, or even solution of acetate of lead. But basic acetate of lead causes a white flocculent precipitate.

When heated with alkaline copper solution, and still more, after being first heated with diluted sulphuric acid (the resinous precipitate being removed by filtration), it causes a separation of red cuprous oxide (Cu_2O). Asebotoxin, therefore, belongs to the glucosides; it contains no nitrogen. On combustion, it produces vapors which excite coughing, then chars, and is consumed without leaving a

* Translated from the author's manuscript.

† *Ba*, horse; *sui*, stunning; *boku*, tree.—*'ma'* horse; *kuwasu*, not eat.—*shikaku*, deer;—*sishi* is a collective name for wild animals, also wild hogs and for lion. Thunberg, in his Flora Japonica, mentions also the name *sishi-gakure; gakure* = to conceal, to hide one's self, on account of the dense foliage of the shrub.

‡ According to the *Honzokomoku keimo* (the commentary of the *Honzokomoku* by Li-shi-shin).

§ From this it is also called *fugu shiba; fugu*, poison-fish; *shiba*, plant.

‖ According to the *Yudoku somoku zusetsu* (Explanation and Illustration of poisonous Plants). It is also stated in this work, that deer, after eating the leaves, suddenly lose their antlers. In Li-shi-shin's Honzokomoku is also found the statement that a decoction of the leaves drives off the impure blood, in women, after childbed.

¶ On all these works, and some others of similar nature, see the article on Japanese Medicine and Pharmacy on page 20, etc., of our volume for 1877.

** *Tin*, peculiar; *shu*, ball; *kwa*, flower.

†† *Bei*, rice; *han*, food; *kwa*, flower.

‡‡ Fascic. v., p. 896, Pl. 1712.

§§ *Flora Japonica*, p. 181, Pl. 1784.

residue. The aqueous solution has a bitter taste, and produces a strong tingling upon the tongue.

I found the fatal dose for rabbits to be three milligrams (about $\frac{1}{20}$ grain) for each kilogram of the animal, by hypodermic injection.

Weight of rabbit in kilos.	Asebotoxin injected, in aqueous solution.	Dose calculated for each kilo of the animal.	Result.
3.24	9.5 milligr.	2.9 milligr.	Death in $1\frac{3}{4}$ hrs.
2.80	5.5 "	2.0 "	Recovery after several hours.
1.35	4.5 "	3.3 "	Death in 1 hr.
1.28	3.6 "	2.8 "	Death in 3 hrs.
1.25	2.5 "	2.0 "	Recovery after several hours.

The observed external symptoms are chiefly the following: After administering a dose, of about the fatal limit, the rabbit is seized, in about fifteen to twenty minutes, by a strong trembling, and begins, while producing snarling or groaning sounds, to make slight retractive motions with the head. These become gradually more intense; the forward movement of the head being made with wide-open mouth, and accompanied by a smacking, sucking sound; the nostrils being widely opened. Sometimes diuresis or defecation are observed. Now and then the animal suddenly springs up and runs around anxious and groaning. The temperature of the body diminishes sensibly; by degrees, the animal loses its power of motion, and lies on one side. Next, there appear symptoms of paralysis in the extremities, the mucous membranes of mouth and nostrils appear very anæmic, and exude mucus, and, after some convulsions, the mouth and nostrils being wide open, death supervenes, under symptoms of cyanosis, apparently by suffocation.

In the rabbit which weighed 3.24 kilos, I observed, shortly before death, a strong exudation of a milky turbid liquid in the eye.

Dogs begin to vomit soon after the poison is injected.

The differences are entirely analogous to those which are observed after injecting a watery infusion of the fresh leaves. One cubic centimeter of this infusion, corresponding to about 200 milligrams of fresh leaves, kills rabbits of about 1.25 kilos within a few hours, and, therefore, agrees in effect with three to four milligrams of asebotoxin.

Asebotoxin exhibits some fine color-reactions, which are of importance toxicologically. If an alcoholic solution of the substance be poured into a watch-glass and strong hydrochloric acid be added, a *magnificent blue color* is gradually developed, and, at the same time, a peculiar odor resembling that of Spiræa ulmaria. On evaporating the blue solution on a water-bath, a fine violet-red tint develops itself at the edge of the liquid. If the blue solution be left to itself, it turns after some time to reddish-gray, and the liquid becomes turbid from the separation of a bluish-gray substance. Concentrated sulphuric acid dissolves asebotoxin with a red color, which becomes, after some time, fine rose-red, while the liquid is rendered turbid from the separation of a bluish-gray substance. If asebotoxin be boiled with diluted hydrochloric acid, the liquid assumes a fine rose-red color, and a brown resinous substance separates. The same effect is produced by diluted sulphuric acid. The above-mentioned peculiar odor is also noticeable during he last named reactions.

TOKIO, August 5th, 1882.

Chloride of Potassium.

PROF. WERTHEIM remarks the mistake that is often made by physicians in using the chlor*ate* instead of the chlor*ide* of potassium as a local application in sore mouths and throats. While the chlor*ate* may in concentrated solution prove very harmful, the other salt is an excellent remedy when used as a gargle. [Chloride of sodium or common salt will probably be found equally efficacious.—ED. N. R.]—*Wien. Med. Blatt.*

Adulterations of Some Ordinary Drugs and the Means of Detecting Them.

BY J. WOODLAND, F.L.S., ETC.*

DURING the past three or four years, in samples of drugs sent to me, I have come across adulterations, intentional and otherwise, that, to the best of my knowledge, have not been previously mentioned; so I take the opportunity of bringing before your notice a few notes on those adulterations, made at the time of their observation, and also a few samples of such as I have been able to obtain and retain.

Whilst taking a stroll in Devonshire last Easter, my attention was arrested by noticing a woman of the working class, in strange attire, stopping frequently to pluck certain leaves, of which she seemed very particular to select only the youngest. After making inquiries, I at length learnt that she was a botanist, and collecting *Fax fanger's* leaves, which, it afterwards turned out, was a corruption of *foxglove*. On my remarking that the leaves she had plucked were principally those of the primrose plant, she freely expressed her sympathy for my ignorance in the matter, and garnished her saying by assuring me that her business was better known to herself than to meddlers; but, as if to throw out a challenge, asked me to separate the leaves of the primrose, if she had any, which, after some delay, was accomplished, not much to her own satisfaction. This little incident recalled very forcibly to my memory the fact that an old friend of mine—who, as far as possible, collects his own leaves and roots—had written to ask if there was any danger of confounding any other leaves for those of the digitalis plant besides those of the ploughman's spikenard, or *Inula Conyza*, as the preparations made from his sample were almost, if not quite, inert, for which he was at a loss to account. After obtaining some of his stock and examining them, I found at least seventy-five per cent to be leaves of the primrose plant, and the rest were tufted annual leaves of the digitalis. By subsequent correspondence I ascertained that as he had usually seen the digitalis leaves in commerce in tufts, he presumed that they were most active in that form, and had made no reference to the statement in the B. P., as to the time of collection. On examining samples obtained from other chemists, who, I think, were friends of his, the same admixture was discovered, evidently occasioned by mistake in collection. In order that detection of primrose leaves with those of digitalis, in a fresh or dried state, may be made, I have drawn out the subjoined tables, which enumerate the differences existing:

FRESH LEAVES.

Digitalis.	*Primrose.*
1. Apex acute.	1. Apex rounded
2. Margins plane with midrib, or nearly so.	2. Margins curved downwards, as in revolute vernation.
3. Petiole winged, with veins extending down it.	3. Petiole very broad at base, without any veins in wings.
4. Shape ovate-lanceolate.	4. Shape spatulate.

DRIED LEAVES.

Digitalis.	*Primrose.*
1. Thick, crisp, brittle.	1. Thin, flaccid, bendable.
2. Show colorless reticulations when held up to light.	2. Show dark-brown reticulations when held up to light.
3. Veinlets very prominent on under surface.	3. Veinlets project but slightly on under surface.
4. Lateral veins confluent for some distance with midrib.	4. Lateral veins terminate at midrib.
5. Petiole winged, with veins continued in the wings.	5. Base of petiole very broad, with no veins in wings.

* Paper read before the Chemist's Assistants' Association.

The presence in commerce of so many samples of the first year's leaves of the fox-glove show that the directions given in the Pharmacopœia regarding their collection are not often considered, and the attention of pharmacists should be drawn to this fact, as the unofficial first year's leaves occur in tufts, and those of the flowering second year's plant singly.

The sample of *cochineal* on the table was sent to me about four years ago by a former pupil of mine, engaged in the service of a firm of chemists in the north of Scotland. The presence of an adulterant becomes apparent during pulverization, as, after heating, very little difficulty ought to be experienced in powdering the genuine drug, whilst, in this case, large scales separate which cannot be reduced to powder. The adulteration is of vegetable origin, and consists of the locustæ or spikelets of *Briza media*, or common quaking grass, which flourishes in English meadows, and is remarkable for having its spikelets placed on very slender stalks, so that the slightest breath of air causes them to vibrate freely. The fact that this plant does not grow in the north of Scotland is sufficient to account for its non-recognition, though its graminaceous origin was suspected, and its presence was remarkable, considering that no heavy powder had been incorporated with it or the cochineal, as bulk for bulk the adulterant weighs only three-fifths of the weight of the genuine drug.

The characters for identification of *Briza media* are—firstly, its very apparent scaly nature, due to the glumes not being closely compressed, secondly, its shape, which is ovoid, approaching triangular; thirdly, its color, which is a purplish-brown, alternating with white; fourthly, the absence of angles, which are very evident on the surface of the insect; and, lastly, the remains of the stalks affixed to each, to remove which would cause too much work. These stalks are not long enough to be confounded with the antennæ of the male insects; and, again, whilst there is only one stalk to each spikelet, there would be two antennæ to each male insect.

The next instance is admixture of *castor* in *almond oil*. Almond oil, owing to its non-congealing property, is used for numerous household purposes, and must have its non-adhesive character considerably altered by the presence of castor oil, although, as is well known, the latter is not by any means a quick-drying one. My attention was first drawn to this adulteration by noticing that a sample of oil which I had by me in a bottle minus a cork seemed less fluid than other samples which I had been accustomed to use, and also that when dropping from the bottle, the drops parted with reluctance, instead of easily, as they do when pure almond oil is used. After shaking with rectified spirit (an equal volume), a sensible diminution in the volume of the oil was apparent, and suspecting the presence of castor oil, I applied the test mentioned in "Pharmacographia" under the head of "Balsam Copaiba," for this oil (see below), with the result of obtaining the odor of œnanthol very distinctly, and after trying a few reagents found that solution of ammonia formed a ready test for the presence of castor oil in that of almonds. If pure almond oil be shaken with half its volume of liquor ammoniæ fort. B. P. (diluted with an equal volume of water), a white emulsion is formed, and if any separation should occur it will be at the surface. With castor oil the action of solution of ammonia is very slight, as it does not emulsify with this reagent at all readily, but separates in globules, which, on shaking, sink to the bottom, and, if five per cent of castor be present in almond oil, the separation of globules to the bottom after shaking with liquor ammoniæ is very evident. To apply the œnanthol test, shake the sample with rectified spirit and decant the spirituous solution, which should then be evaporated in a water-bath, after which quicklime and a strong solution of caustic soda should be added, and the whole heated in a test-tube, when the characteristic odor of œnanthol can be easily detected, should this sophistication be present; but to be sure of the odor it is best to heat a small quantity of castor oil with quicklime and a strong solution of caustic soda, so as to have primary evidence of the odor.

The following adulteration was made evident during some experiments that were being made upon *cinchona barks*. Happening to heat some powdered Carthagena bark (during the process of extraction of the alkaloids) with dilute sulphuric acid, I was surprised to notice the odor which pervaded the room (faint though it was) of cinnamon that was proceeding from the boiling liquid, and I examined the apparatus, etc., to see if any traces of cinnamon or cassia bark were present, with a negative result. Reference to a price-list showed that cinnamon bark would not be used to adulterate that of cinchona in powder, but that cassia might be so employed, and, accordingly, tests were made by means of which the presence of this impurity was established. The odor proceeding from the decoction of Carthagena cinchona was slight, and on heating a small quantity of powdered cassia found that that was strong, hence I assumed that the cassia bark must have been almost exhausted of its oil before admixture, because if only four or five per cent of cassia be mixed with genuine cinchona bark the odor of the former is very evident.

In order to detect the presence of exhausted cassia in cinchona, the most reliable test appears to be the heating of the sample with bichromate of potassium, and dilute sulphuric acid, when, if the preceding adulteration be present, the odor of oil of bitter almonds is evolved, caused by the oxidation of the cinnamic acid left in the bark. Of course, exhausted cinnamon bark might be used as an adulteration with profit to the mixer, but in the present instance the large amount of mucilage precipitated by acetate of lead proved that the impurity was that of cassia.

The last adulteration I have to notify is that of *magnolia leaves* with those of *cherry laurel;* but these I have only seen in the dried state: whether these leaves are confounded with each other in a fresh condition I am unable to state, although, as the plants grow somewhat alike, and the leaves are not very dissimilar, there is a probability of such an occurrence. In case of the admixture of these two kinds of leaves with each other in the dried state, the following characters will serve for distinction, though, as the magnolia is a much rarer shrub than that of the cherry laurel, the probability is not very great, and the adulteration brought to my notice was evidently unintentional.

DRIED LEAVES.

Cherry Laurel.	*Magnolia.*
1. Reticulations not much marked on either surface.	1. Reticulations plainly evident on both surfaces.
2. Margins in form of distinct lines at sides of leaf.	2. Margins inrolled towards under-surface at the extremities.
3. Reticulations barely visible on holding up to light on account of thickness of leaf.	3. Reticulations clearly seen on holding up to light.

—*The Chem. and Drugg.*, July.

Automatic Weighing Scale.

THE automatic weighing scale invented lately by Frank D. Payn, of Albany, New York, has the following peculiarities in its construction:

"Along the face of the lever-arm or scale-beam C two longitudinal slots, one above the other, are made, the upper slot being slightly curved in allowance for the radial movement of the beam about its fulcrum *b b*, for a purpose hereinafter set forth. In said upper slot a slightly curved tube of glass, G, is arranged, and in this instance is protected from danger of breakage by flanges *c' c'* on the beam-face C, which project from and over the upper edge of the slot, in the manner of a roof or shield. The tube G is filled with mercury or other liquid, saving an air or bubble space, usually met with in leveling-tubes, and in said bubble space a disk of metal with needle-point projection, or, if other liquid than mercury be used, a float-disk of sassafras-pith, or the like, is placed, which said disk or float shifts with the bubble, and by its index-

needle ascertains with accuracy the exact point or line of subdivision on the graduated scale (marked on the tube or on the beam above the tube) that is central to the bubble.

"It will be apparent that the slight curvature given to the upper slot, and as well to the tube G retained therein, allows for a more accurate adjustment and reading of the bubble and float than would otherwise be possible in determining the level point of a scale-beam moving radially about the fulcrum *b*. The lower longitudinal slot of the scale-beam admits a counterpoise weight or rider *c*, which may be used to balance a bucket, cask, bottle, or other tare weight resting upon the scale-pan, though to simplify structure this additional slot and adjuncts may be dispensed with.

"The plunger-cup E being filled with mercury and arranged in position, as shown, a quantity of the same liquid metal is poured into the outer vessel or dash-pot D, just sufficient to buoy the plunger-cup, and so maintain the beam and scale-pan in zero equilibrium. When the point of buoyancy is reached, it must be apparent that any substance placed upon the scale-pan will tend to depress the same, to elevate the beam, and to lift the plunger-cup from out of the mercury bath in which it is submerged,

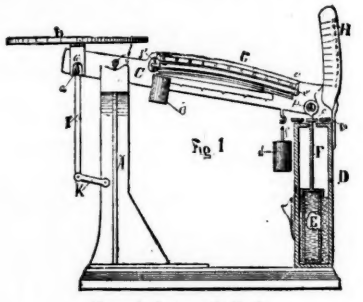


Fig 1

Payne's Automatic Scale.

thus removing said cup from the buoyant influence of the bath, and making it more and more a dead weight to counterpoise the article on the pan. This tendency will continue until finally the parts are in equilibrium, when the weight will be determined by the position of the float pointed in the measuring-tube, or else by that of the finger on the end of the scale-beam, which traverses the graduated scale H, said scale being secured to the dash-pot and suitably marked by radial lines running from the fulcrum *b* as a centre. Any other liquid may be used in lieu of mercury in the dash-pot or plunger-cup—such, for example, as glycerin, the oils, water, etc.—but not with same advantages or with as accurate results as attend upon its use. Being of high density, the mercury permits of compactness in structure of machine, and causes the scale-beam to come to rest and at poise more quickly than the less dense liquids acting as resisting media to the plunger can accomplish. It is influenced in volume much less than these at ordinary temperatures, vaporizes well-nigh unappreciably, and does not adhere to the sides of the plunger in its to and fro movement. For these reasons mercury is preferred, particularly for the bath in the dash-pot, though, as heretofore stated, no essential difference in principle is involved in the substitution of other liquids therefor. The cup-plunger may be dispensed with, and a solid bar of metal or like heavy material be employed instead. Both cup and pot may be made of gutta-percha to lessen conductivity, though for cheapness, these parts are of iron or of carbon coated brass, the coating designed to resist the attack of the mercury.

"A bob or poise *d* may be suspended from a hook near the forward end of the beam C when the weight of the article on the scalp-pan is in excess of the compass of the measuring tube or scale.

"Near the upper end of the stem F, a disk or flange *e* is secured, which may be faced with felt or other like packing material. When the scales are to be transported, the stem is forced down until the said flange *e* is seated snugly against the top of the pot D, whereupon the turn-buttons *f f* are brought in place over the flange, thus securing the beam from movement and the mercury or other liquid in the pot from escape."

Dialyzed Iron.

On page 206 of our July number, we published a process devised by Dr. C. Schacht, of Berlin, for a rapid preparation of "dialyzed iron," which the author declared to be *entirely* identical with that prepared by actual dialysis.

We have been favored by Dr. Bruno Hirsch, of Frankfort o. Main, with a criticism of the formula, and reproduce here the principal passages of the same, referring the reader to the text as printed in our July number:

1. The figure 485 (parts of solution of ferric chloride) has been declared by Schacht himself to be a printer's error instead of 425. But the figure 485 is also found in the printed "Vorschläge für die Pharm.-Germ., II.," which appeared shortly before; and besides, even 425 is too high compared with 580 parts of 10 per cent water of ammonia. 425 parts of ferric chloride solution containing 15 per cent of iron, require at least 600 parts of 10 per cent water of ammonia (Hirsch prefers 650 parts) to be sure that the precipitation is complete and no basic salt is produced.

2. 60 parts of hydrochloric acid (sp. gr. 1.124 = 25 per cent HCl) can dissolve, even without warming, much more ferric hydrate than can be obtained from 425 parts of solution of ferric chloride. According to Schacht's figures, one equivalent of hydrochloric acid would be required to dissolve 5½ equivalents of ferric oxides; in reality, however, the same amount of acid can dissolve 8 equivalents. It is self-evident that the ideal solution of dialyzed iron is approached more or less closely in proportion to the greater or lesser basicity of the ferric compound obtained by other processes than dialysis.

3. On evaporating the solution and igniting the residue, the ferric oxide which is left is not pure, but contains much chlorine. But, if the residue be treated repeatedly, in a porcelain crucible, with nitric acid, all the chlorine can be driven off within ten minutes, and, on subsequent ignition, pure ferric oxide will remain.

4. The preparation as made by Schacht's formula is *not* identical with "dialyzed iron."

Dr. Hirsch was not able to state, on the day when he wrote his letter, how the formula would be changed in the final revision of the new German Pharmacopœia. As we have since then received an advance copy of the work, we will quote the adopted formula here. It will be seen on examination that the formula is improved in accordance with the criticisms made by Dr. Hirsch:

Liquor Ferri Oxychlorati. Liquid Oxychloride of Iron.

	Parts.
Solution of ferric chloride (sp. gr. 1.280–1.282, containing 10 per cent of iron)...	35
Water of ammonia (sp. gr. 0.960).....	35
Hydrochloric acid (sp. gr. 1.124)....	3
Water.....	q.s.

Dilute the solution of ferric chloride with 160 parts of water, and pour the liquid into the water of ammonia previously diluted with 320 parts of water. Wash the precipitate, press out the liquid, and then add to it the hydrochloric acid. Let it stand during three days, then warm it gently until the precipitate is dissolved, and finally adjust it to the sp. gr. 1.050 [at 15° C.].

The product is a brownish-red, clear, odorless liquid of only faintly astringent taste; it contains nearly 3.5 per cent of iron.

1 *cc.* of the liquid, diluted with 19 *cc.* of water, then

mixed with 1 drop of nitric acid and 2 drops of tenth-normal solution of nitrate of silver, should yield a mixture which is clear when examined by transmitted light.

If liquor ferri oxydati dialysati is prescribed, the liquor ferri oxychlorati may be dispensed.

Some of the Uses for Ergot.

DR. JOHN DEWAR writes to *The Practitioner* some interesting experiences in the use of ergot. In the course of the article, he remarks on the contradictory results derived from its use. "Several things may account for this: the inertia of the drug, the dose administered, and the manner in which it has been given. Certain preparations are inert, or nearly so—as the stale powder and the ordinary tincture. Heat is said to be destructive in preparing it, though old practitioners who have for a lifetime been in the habit of making at the bedside 'tea' from the powder or the 'beans' will doubt this. Alcoholic extracts are less powerful than aqueous ones. But it is even now a disputed point among chemists and physiologists as to what its active principle is. Levi says it is due to phosphoric acid, Winckler to the trimethylamine it contains, and Dragendorff to sclerotic acid, and this seems the most likely. Most observers agree that ecbolin and ergotin are *not* active principles, and that these never bring about the specific action of the drug—the so-called *ergotin* in use not being ergotin, but a compound body. However, all this is of minor importance to the physician, provided he obtains an active preparation. The liquid extract and the ammoniated tincture are the best, the latter especially, in obstetric practice. Ergotin is most convenient for subcutaneous injection."

Speaking of its use as a remedy, Dr. Dewar recommends it for trial in whooping cough, and as a means for arresting nasal catarrh in its early stage. The former is supported by so considerable experience that we quote it also.

"In mentioning a few diseases in which I have found it useful, I would place at the head of the list *Pertussis*.

"I am aware that in this disease a vast number of remedies are useful, but after a pretty extensive trial, both in hospital and private practice, I am inclined to regard ergot as the best and safest. Up to the time when I began to use ergot, I regarded the combination of bromide of potassium and tincture of belladonna, or sulphate of zinc and tincture of belladonna, as the best remedies with which I was acquainted, but that sometimes necessitated the belladonna being pushed to its physiological action before the disease would yield. That was sometimes not unattended with danger in young children unless they were carefully watched, which cannot be easily done in hospital or dispensary practice. Ergot seldom fails to cure whooping cough in from one to three weeks; the cases that are longer in getting better are those complicated with bronchitis, or with troublesome bronchial catarrh. I give from four to fifteen minims of the liquid extract every three or four hours to children of three months and upwards. The benefit of the *secale* is at once apparent, the fits of coughing occur less frequently, and are not so severe when they do occur. I usually give it alone with a little sugar, but in complicated cases it may be combined with other remedies, and especially with the compound syrup of the phosphates to complete the cure when there is debility. . . .

"I do not here claim for ergot any *specific* power, but rather a physiological one. It *may* have a specific action, but of that there is as yet no proof. However, of its power to cut short the disease, there can be no doubt, whatever be the theory of its action. This I have in scores of cases proved, nor is it necessary to give cases in detail, as all the cases would simply show a daily declension of the disease till, at the end of a fortnight or three weeks, the cough quite ceased. But in some cases the cough returns when the medicine is left off, so it may have to be continued for two or even three months; this, however, is the exception."

Oil of Thyme of Commerce is Said to be very Often Deprived of its Thymol. Is this Statement True?

BY JOSEPH L. LEMBERGER.

IN experimenting with oil of thyme in answer to this query, we have taken for granted that the declaration made by A. W. Gerrard, who ably investigated thymol, its sources, manufacture, and application as an antiseptic agent, was justified by his researches. He is credited with saying oil of thyme is said to yield as much as fifty per cent thymol on the continent; we, therefore, hoped to obtain from pure oil of thyme, if not fifty per cent, at least a considerable percentage of thymol. The writer purchased nine (9) separate lots of oil of thyme from as many different houses in New York and Philadelphia. Only one of these is known, however, to have been distilled in this country, and this one only we feel warranted in vouching for as a pure distillate of Thymus vulgaris. The experiments were conducted in the following order.—

No. 1 was bought as pure red oil of thyme, and yielded 1.67 per cent of dark crystals.

No. 2 was bought as pure white oil, and yielded 6.67 per cent of lighter-colored crystals.

No. 3 was bought as pure red oil, and yielded 16.67 per cent of dark crystals.

No. 4 was bought as pure white oil, and yielded 80 per cent of light-colored crystals.

No. 5 was bought as pure white oil, and yielded 42 per cent of light colored crystals.

No. 6 was reported a very old white oil, and yielded also only 42 per cent of light crystals.

No. 7 was bought as pure French red oil, and yielded 7.92 per cent dark crystals.

No. 8 was the undoubted American white oil, four months old, distilled from dried French herb, and yielded 84 per cent.

No. 9 was a dark red oil, rich in color, and very odorous, obtained direct from the importer, and this yielded 38.75 per cent dark-colored crystals.

The process used by the writer for separating the thymol consisted in treating the oil with a twenty-per-cent solution of pure caustic soda, and after separating the solution of thymolate of sodium formed, treating this with ether, which, on evaporation, yielded the thymol in the form of irregular crystals.

That obtained from the dark oils was dark in color; that from the white oils much lighter.

Another process was employed upon portions of the same oils to prove the former experiments, viz., that of treating the oil with caustic soda, then separating the alkaline solution, and adding to this hydrochloric acid (C. P.), so long as the supposed thymol separated or rose to the surface as a float. The float was separated by filtration, and weighed after drying. The estimate made appeared to be about the same.

The last process is not as satisfactory, although undoubted crystals were detected in the first, and numerous minute crystals were found adhering to the vessel, which appeared to be the same under the microscope as those obtained by the former process. The odor of this float, in some cases, and more so that obtained from the oils yielding the least percentage of the crystals, was very suggestive of the action of acids upon turpentine, giving rise to a peculiar empyreumatic odor, and corresponds closely with a product described by Gerrard as obtained by him, as being 12 per cent of oily matter, differing to such an extent in color, odor, and look from thymol, that he could not pronounce it as such.

We observe that the dark oils seem to be the richest in thymol.

The experiments as made seem to justify the declaration suggested by the query, that very little of the oil of thyme of commerce is pure, but in all probability is first deprived of its most valuable constituent by manipulations before it is thrown upon the market.

* Read at the Meeting of the Amer. Pharm. Assoc.

What is the Strength of Commercial Mercurial Ointment?*

BY GEO. W. KENNEDY.

THE writer gave the results of the examination of fifteen samples procured in twelve retail stores, the other three being from wholesale stores.

Attention was paid to noting how it was kept. In several cases, the condition of the specimens was unsatisfactory, owing to negligence in its proper care. The results were arrived at by two methods: one by dissolving the fatty body in ether, and recovering the solid fat; the other by separating the fat by means of a hot saline solution. In both cases, the respective residues were weighed to determine the results.

The results of the examination of the twelve samples from retail stores gave the following percentages of mercury:

Per cent:—26, 34, 20, 32, 38, 50, 40, 31, 24½, 21½, 31¾, 22, while from the wholesale stores, the results were 46, 41¾, 48.

The results of Mr. Kennedy's labors would seem to indicate that most of the ointment sold is that known as "one-third mercury," and that at times it is even considerably weaker. [The ointment should contain fifty per cent of mercury.—ED.]

Testing of Jalap.

BY H. HAGER.

TWO sorts of true jalap are distinguished in commerce, viz., the light and the heavy. Since there is no external criterion to distinguish them, the pharmacist must have recourse to other means of distinguishing them, which should, however, be such as will not injure the tubers. The process recognized by the Pharmacopœia, namely, the assay of the resin, is, in the first place, too circumstantial, and, secondly, it can only extend to *one* tuber at a time. Yet it is important to examine *all* tubers contained in a lot, with a view of detecting fraudulent admixtures. Among the latter may be expected partially exhausted tubers, that is, tubers into which fine incisions had been made, after which they were laid into absolute alcohol for eight or ten days. This treatment removes most of the resin, leaving scarcely three per cent, and, after drying, the tubers present the same appearance as before extraction.

In order to determine the specific gravity of jalap, I took five tubers of similar appearance and threw them into water, when all but one sank under. Resin and sugar, which are present in the tubers, render them heavier than water. The spec. grav. of the resin is 1.15 to 1.16, and that of sugar 1.5 to 1.6. The tubers which sunk in water were found to have a spec. grav. of 1.150 to 1.180. Hence the minimum specific gravity may be put at 1.140, and the pharmacist should reject any jalap having a lower gravity.

The determination is best made by means of a solution of common salt having the spec. grav. 1.140 to 1.142; and the requirement is that at least ninety tubers out of every hundred should sink in this liquid.

To prepare such a solution, two hundred grams of dry commercial table salt are dissolved in 1,055 cubic centimeters (or grams) of water. About fifty tubers are then immersed in this liquid, while being stirred, at a temperature of 15° to 17° C. Should some of the tubers be retained on the surface by numerous adhering air-bubbles, it is only necessary to rub them with the finger, when they will readily become wet. After examination, the tubers are put into a sieve, washed off with water, and dried with a linen cloth.

Although it is stated above that 1.140 to 1.142 may be set down as the lowest permissible specific gravity, it will probably be found, on further examination, that the limit may be raised to 1.150.—Abstr. from *Pharm. Centralh.*, 27.

* Abstract of a paper read at the Meeting of the Amer. Pharm. Assoc.

A New Sulphuretted Hydrogen Apparatus.*

BY CLEMENS WINKLER.

AN apparatus constructed by the author some years ago for the continuous or interrupted generation of hydrosulphuric acid gas in laboratories and manufactories, though fully answering its purpose, had nevertheless been found to be slightly defective by permitting the escape of gas through its joints. This defect has now been removed, and the below-described apparatus is probably now one of the best and most serviceable in use.

A leaden cylinder *A* is securely fastened in a wooden frame of the construction shown in the cut. This cylinder is intended for the reception of the acid, and is provided, for this purpose, with a tubulure *e;* its lower end has a conical shape, and terminates in a pipe, which is connected by means of a rubber-tube and suitable pipes with a cistern, located underground, or in some other convenient place, and intended to receive the saturated solution. Within the cylinder *A* another narrower, leaden cylinder, *B*, may be raised or lowered by means of the winch and

FIG. 1.

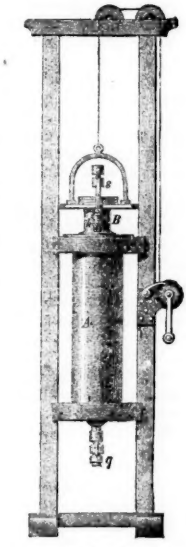


FIG. 2.

Winkler's Sulphuretted Hydrogen Apparatus.

pulley. This cylinder is filled from *r* to near the top with sulphide of iron. It fits snugly to the outer cylinder, and is arrested from complete descent in the latter by means of a collar. At its upper end it is provided with a lateral tubulure and stop-cock, *h*, which is connected with two wash-bottles, the first of which is intended for washing the gas, and the second for affording a constant supply of hydrosulphuric acid water, which may be drawn off from a faucet at the bottom. The top of the inner cylinder is closed by a round disk of thick rubber, and over this, by a flat disk of iron, securely clamped on. This makes a perfectly gas-tight joint. The stirrup carrying the cylinder *B* runs in grooves situated in the uprights, and is, therefore, raised and lowered with perfect ease, and without warping the joints.

When it is desired to generate gas, the inner cylinder is let down into the acid. By hoisting the inner cylinder up, the generation of gas ceases. The author recommends, for the production of a steady and regular stream of gas, to open the stop-cocks in the conduits fully, and to

* *Zeitsch. f. Anal. Chemie*, 1882, 386.

regulate the rate of delivery of the gas by means of pinch-cocks applied to the rubber connection of the delivery tubes.

The apparatus, as constructed by the author, requires about ten pounds of sulphide of iron for filling the cylinder *A*, and about thirty-two pints of sulphuric acid (sp. gr. 1.115), which may be made by mixing three and one-half pints of concentrated sulphuric acid (66° Baume, or about sp. gr. 1.840), with twenty-eight and one-half pints of water. A thin layer of petroleum should be poured on the acid, whereby the escape of noxious odors from the latter is prevented.

The apparatus may be obtained of the described scale (one-twentieth of natural size) and construction from the Royal Saxonian leadworks, "Halsbrücke," near Freiberg, Saxony, for the price of 200 marks.

Report upon the Creasote occurring in the American Market.*

BY PROF. P. W. BEDFORD.

THE object of this query can be but one, namely, to inquire whether the wood creasote offered for sale is a pure article or not; and if not, what is the impurity present.

The relative commercial value of the articles sold as coal-tar creasote and wood creasote disposes of the question as to the latter being present in the former article, and we are quite certain that the cheap variety is nothing more or less than a phenol or carbolic acid. Wood creasote, it has been frequently stated, is adulterated with coal-tar creasote or phenol. The objects of my experiments have been to prove the identity of wood creasote and its freedom from phenol.

The following tests are laid down in various works as conclusive evidence of its purity, and each has been fully tried with the several samples of wood creasote to prove their identity and purity, and also with phenol, sold as commercial creasote or coal-tar creasote, and, for comparison, with mixtures of the two, that even small percentages of admixture might be identified should such exist in the wood creasote of the market.

The following tests were used:

1. Equal volumes of anhydrous glycerin and wood creasote make a turbid mixture, separating on standing. Phenol dissolves. If three volumes of water be added, the separation of the wood creasote is immediate. Phenol remains in permanent solution.

2. One volume of wood creasote added to two volumes of glycerin: the former is not dissolved, but separates on standing. Phenol dissolves.

3. Three parts of a mixture containing seventy-five per cent of glycerin and twenty-five of water to one part of wood creasote show no increase of volume of glycerin, and wood creasote separates Phenol dissolves and forms a clear mixture. Were any phenol present in the wood creasote, the increase in the volume of the glycerin solution, if in a graduated tube, would distinctly indicate the percentage of phenol present.

4. Solubility in benzin. Wood creasote entirely soluble. Phenol is insoluble.

5. A one-per-cent solution of wood creasote. Take of this ten cubic centimeters, add one drop of a test solution of ferric chloride: an evanescent blue color is formed, passing quickly into a red color. Phenol gives a permanent blue color.

6. Collodion or albumen with an equal bulk of wood creasote makes a perfect mixture without coagulation. Phenol at once coagulates into a more or less firm mass or clot.

7. Bromine solution with wood creasote gives a reddish-brown precipitate. Phenol gives a white precipitate.

All tests enumerated above were repeatedly tried with four samples of wood creasote sold as such: one a sample of Masson's, one of Merck's, one evidently of German origin, but bearing the label and capsule of an American manufacturer, and one of unknown origin, but sold as beechwood creasote, German, and each proved to be pure wood creasote.

Two samples of commercial creasote which, from the low cost were known to be of coal-tar origin, gave the negative tests, showing that they were phenol.

Corroborative experiments were made by mixing ten to twenty per cent of phenol with samples of the beechwood creasote, but in every case each of the tests named showed the presence of the phenol.

The writer on other occasions applied single tests (the collodion test) to samples of beechwood creasote that he had an opportunity of procuring small specimens of, and satisfied himself that they were pure.

The conclusion is, that the wood creasote of the market at the present time is in abundant supply, is of unexceptionable quality, and reasonable in price, so that there is no excuse for the substitution of the phenols commonly sold for it. When it is directed for use for internal administration (the medicinal effect being entirely dissimilar), wood creasote only should be dispensed.

The general sales of creasote by the pharmacist are in small quantities as a toothache remedy, and phenol has the power of coagulating albumen, which effectually relieves the suffering. Wood creasote does not coagulate albumen, and is, therefore, not as serviceable. This is perhaps the reason that it has become, in a great measure, supplanted in general sale by the coal-tar creasote, to say nothing of the argument of a lower cost.

* Read at the Meeting of the Amer. Pharm. Assoc.

Behavior of Anhydrous Sulphate of Copper towards Absolute Methyl-Alcohol.

A. KLEPL has made the observation that anhydrous sulphate of copper is somewhat soluble in absolute methyl-alcohol, but that the subsequent addition of about one-tenth of its volume of water, and of a further small amount of the anhydrous salt, and shaking, cause the complete separation of the copper salt, and the restoration of the methyl alcohol from a bluish-green tint to a colorless condition.

Absolute methyl alcohol, therefore, can dissolve a small quantity of anhydrous sulphate of copper. But the latter is so eager to take up water, that it will abstract it from hydrous alcohol. The crystalline salt is entirely insoluble in the menstruum.

Anhydrous sulphate of copper may, hence, be used as a test to ascertain the absence of more than traces of water in methyl alcohol.—*Journ. f. prakt. Chem.*, 1882, 526.

The Manufacture of Oxalic Acid by Synthetical Methods.

SINCE formic acid has already been prepared synthetically—from carbonic oxide and caustic soda or potassa—and since it has been shown by V. Merz and W. Weith that the formates of sodium or potassium may be converted into oxalates by energetically heating, it is now proposed by the latter two chemists to utilize this method for the manufacture of oxalic acid on the large scale. A series of experiments were conducted to ascertain the most economical salt of formic acid to start from, and the conditions under which the largest yield is obtained. It was found that the formate of sodium yields the largest product, if it is heated energetically to a temperature somewhat over 400° C., air being excluded as much as possible. The residue then consists of seventy or more per cent of oxalate, the rest being carbonate. If the temperature is lower, say about 360° C., more carbonate than oxalate results, which is somewhat surprising. Formate of potassium likewise yields oxalate when heated to over 400° C., but only carbonate when heated only to 360° C. The calcium, barium, and magnesium formates yield only carbonate at any temperature.—*Ber. d. Deutsch. Chem. Ges.*, 1882, p. 1,507.

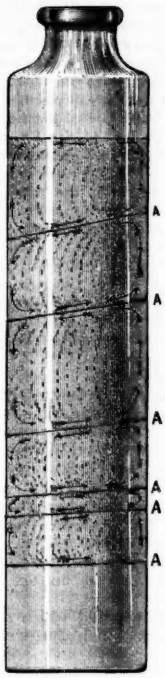
Precipitates in Fluid Extracts.*

BY PROF .J. U. LLOYD.

In considering the formation of precipitates or sediments in fluid extracts and tinctures, I have previously presented a line of experiments to show that, to a greater or less extent, they result from the mixing of various solutions whereby a new solvent is formed, and which is incapable of retaining in solution the matters extracted from the crude material by each section of the original percolate: hence a line of precipitates. As this act of precipitation progresses, the solvent power of the menstruum changes, in consequence of deposition of material which formed a part of the previous liquid; therefore, the deposition of one precipitate led to the formation of others. If this phase alone were to be considered, after a certain length of time, varying perhaps from months to years, the menstruum would arrive at a point where it could hold in solution all of the material then dissolved, and at this point the act of precipitation would cease. This view of the case must be accepted, even if we assume than none of the constituents in solution are soluble, after purification, in the original menstruum; for, after a certain time under such conditions, a pure menstruum would remain, and all of the dissolved matter would have settled to the bottom of the vessel.

Now we know that this point is never reached. Fluid extracts and tinctures often precipitate to a very great extent, and sometimes become much lighter in color, but never reach a point where all of the dissolved matters become insoluble. Upon the other hand, under ordinary conditions, changes usually follow as long as we may keep a specimen of fluid extract, and the result of these changes is a continuous precipitation. In taking up this phase of the subject, it may seem that the two preceding statements contradict each other. However, such is not the case, for continuous precipitation may be taking place without depleting the liquid of dissolved matters, and may continue for an indefinite period. Let me introduce the proposition with the following experiment, which, although apparently foreign to our subject, will illustrate phenomena which follow with the tinctures and fluid extracts upon our shelves.

Into a glass vial from six to twelve inches in length and an inch in diameter, pour distilled water until it is half filled, then finish filling the tube with simple syrup. The mixture at first will not be transparent, owing to the different refractive power of the mixture of liquids; after a time, however, the liquid appears homogeneous and transparent, and is apparently uniform, a diluted syrup. Place the tube near a warm stove or hang it against a hot steam pipe, and in a few moments the liquid will have divided into several sections by what appears to be sharp planes.† These planes of division resemble the plane which divides a layer of chloroform from a layer of water, and are fully as sharply defined, but the refraction of light from the surfaces of the upper and lower liquids is not as great. To observe the lines of division most readily, place the eye on a level with the tube, and gradually raise or lower the head so as to bring the edges of the planes one after another before the eye, when sharp distinct lines will appear. If the eye be just above or just below the edge of the plane, a reflection from its surface will become apparent and which resembles the afore-named reflection from the contact surfaces of chloroform and water. These divisions remain for some time, often for days, dependent upon the diameter and length of the tube, difference in gravity and viscosity of the liquids, and the heat to which the tube is subjected.*



By referring to the accompanying figure the phenomena will be found illustrated exactly as presented to the eye of the artist, who made the drawing from a vial which had been heated a few moments. The heat was applied along the side marked A, and the letters show the line of division.

Let us examine more closely the contents of the tube while heat is being applied, and during which the planes to which I have referred are distinct. If the solutions are transparent and the heat regular, the observer will not be able to detect a trace of motion. The lines which are the edges of the planes of demarcation will steadily hold their position as though fixed on the glass, and the liquid between the lines will appear to be at rest. These conclusions are erroneous, however, for the planes are gradually shifting their positions, and from time to time will severally disappear, to be succeeded by others, and the liquid within the tube is in rapid motion.

If the experimentor will scatter over the surface of the liquid a few particles of some finely divided powder, which is insoluble in the liquid, each particle will settle with a steady motion until it strikes the upper plane, where the downward motion will experience more or less of a check, as though it had struck some obstruction; then it will pass through the second section of liquid with decreased velocity. Upon reaching the second dividing plane another arrest in the velocity of the downward motion will be experienced, and the particles will afterward settle more slowly. This experience will be repeated with each plane and each section of the solution until the fall of the powder ceases. Now it will be found that each plane or section of liquid will have arrested certain portions of the powder. This distribution is in accordance with the gravity of the different particles of which the powder is composed; those of less density being first arrested, and others in accordance with their weight falling until they reach a section of solution, or a plane, of their own specific gravity, and such particles as have a greater gravity than the lower stratum of solution will have reached the bottom of the tube.

Let us now consider the composition of this solution, and the changes which gave rise to the formation of these planes of division and intervening sections of liquid, each of different specific gravity.† When we poured the syrup into the water, by reason of its greater gravity a portion of it settled to the bottom and formed a layer of syrup. Other portions became more or less mixed with water, and in

* Read at the Meeting of the Amer. Pharm. Assoc.

† It might naturally be supposed, that when the heat is applied to one side of the length of a tube under the conditions named, one upward current of fluid would result along the entire side next to the heat. Of this were the case, in a few moments the entire contents of the tube would be a uniform mixture. Such is not the result, however, and in consequence much time is necessary to effect this end. On a larger scale, but following the same principle, we have oceanic and atmospheric currents, giving us the Gulf Stream, and the strata (clouds) of condensed or precipitated vapor between the moving currents of air.

* By viscosity of liquids I refer to those that have little diffusive power, and which are known to form ropy and sticky solutions. Thus, under the same conditions a heavy solution of potassium bromide will disappear much sooner than a solution even of less gravity of gum or glucose.

† I have as yet simply made the statement that those sections are composed of different solutions, and have brought no proof to demonstrate the fact. This is self-evident, however, although it is but just for me to say that these sections have been examined severally at different times, and invariably there is an increase of solid matter in solution as we progress from the surface downward. The following example illustrates this fact, a tube containing a dense solution of sodium chloride overlaid by distilled water having been submitted to a one-sided heat until it had formed five zones. Upon removing one *cc.* from each zone, the proportion of sodium chloride was as follows:

No. 1 (top), 0.24 gr.; No. 2, 0.73 gr.; No. 3, 2.37 grs.: No. 4, 3.97 grs.; No. 5, 4.44 grs.

accordance with the gravity of each mixture, arranged themselves over the syrup. This selection of position continued, the upper portion of the tube containing nearly pure water. In a short time the act of diffusion had blended the points of contact between the various solutions, giving to the contents of the tube the appearance of a homogeneous liquid. When heat was applied to one side of the tube, expansion of the liquid next to that side resulted. Each portion of the liquid next the heated side of the tube started upward, but, excepting more or less of the top of the liquid, each heavy layer quickly reached a lighter overlying stratum through which, by reason of its greater gravity, it could not ascend. Hence at intervals the top of each stratum of this current ceased to rise, but owing to the upward pressure of the current beneath, it was crowded away from the side of the tube and into the cool solution beyond. The deficiency occasioned by this upward current was supplied from the lower part of each section of the liquid, and quickly we had a circulation of liquid. Each of these eddies continued to increase in a horizontal direction, but remained bounded by nearly the same planes above and below. Finally the entire tube was filled with eddies, each of less specific gravity than the one below.

When we dropped the powder on the surface of the liquid within the tube, each particle descended in the manner before explained, until it reached a section of solution nearly of its own specific gravity, where its fall was arrested. Not so the motion, however, for each particle of powder circulated with the liquid within which it was retained, thus showing us exactly the movement of each section of solution within the tube.* This movement will continue while heat is being applied, or until the entire liquid within the tube is of the same composition, and then the solution as one body will circulate from the bottom to the top of the tube.

The experiment which I have described, and which all can verify easily, is typical of the motion which always results when heat is applied to liquids of different specific gravities, if they are capable of forming a solution one with another. A variety of movements may be obtained by varying the position of the body which imparts the heat, but such variations simply result from modification of manipulation. It matters little whether the heat be applied evenly to all parts of the vessel, to the bottom, or to other sections, circulation follows, and the result is finally a uniform mixture of the liquids†.

If a tincture or a fluid extract be made by percolation, and the percolate be received in the order obtained, there will be a decrease in gravity from the bottom of the container upward. This is in consequence of the well-known fact that the denser part of the percolate passes first, and that the percolate grows less dense with more or less regularity as percolation progresses. When such a percolate is permitted to stand, it will resolve itself into strata, and in a manner similar to the experiment we have cited the liquids will mix. The phenomenon is not so readily observed in these instances, owing to the fact that most percolates are dark in color, and will not permit the passage of light, but the collection of strata of precipitates at one or more points throughout such liquids, indicates where the lines of division are to be found; and it is for the purpose of introducing these precipitates understandingly that I have briefly directed attention to the experiment with the tube of liquid, and I will now return to a more minute analysis of the changes which occur.

Under the conditions we have named, it has been shown that each solution rested upon one more dense, and where the liquids are in contact we have motion in opposite directions. The surfaces of each of these liquids appear to be in direct contact, and to move as though pressing against a solid plane, which is the line of division between them. If we magnify this apparent line, it will be found of considerable thickness, and in reality to consist of a stratum of fluid almost at rest as compared with the rapid flow of the upper and lower strata. However, it is in a state of excitement occasioned by the friction of the two opposing solutions, and is eddying and struggling as it is tormented by these contrary agents. It will be further found that portions of the upper side of this thin stratum are being constantly torn off and carried mechanically into the upper liquid; and this is true also of the lower side and the lower liquid. As the stratum is made up of a mixture of these two revolving bodies, and its existence depends upon an admixture of these liquids, it follows that whenever a portion of the stratum is detached and carried into one liquid, the result is an admixture with it of a portion of the other liquid. Inasmuch as these admixtures are constantly taking place while the circulation of the liquids continues, it follows that there is a continual handing down of the upper revolving liquid, and a handing upward of the lower. When we consider that the foregoing example is a simile of changes that are taking place throughout the entire tube with each of the other sections, we must see that at some time the liquid at the bottom and the liquid at the top of the tube will have become identical in composition. We can also see that this interchange is independent of the act of diffusion, and can only be considered a result of mechanical action, the primary agent being heat. Now if we have a liquid at the top of the tube differing from that at the bottom to such an extent that when these liquids are mixed precipitation results, it follows that wherever the liquids are interchanging in the proper manner, precipitation must follow at that point.* Hence it is that I have called attention to the foregoing argument and experiments as a means of illustrating a fact connected with precipitates in tinctures and fluid extracts, which perhaps has not presented itself to many of us, but which will be often noticed after attention has been called to the matter.

After a precipitate has formed in a tincture or a fluid extract, it is generally accepted as permanent. All will admit that precipitates often continue to deposit for months, and even years, but I cannot find it recorded that they disappear. It is true, however, that a line of precipitates may form and then decrease in size, only to form and waste away again. This growth and reduction is readily understood when we consider the cause of their production, and to do this, I beg leave to refer to my last communication on this subject (Proceedings for 1881). I there called attention to the fact that a percolate was a mixture of solutions, and that continuous precipitation resulted after the percolate was mixed from inability of the mixture to dissolve substances which were perfectly soluble in the fractions of the percolate at various stages of its production. From this reason I argued that, with ordinary hydro-alcoholic menstruums, we could not expect a line of permanent fluid extracts. This explanation, however, is insufficient to carry the production of precipitates beyond certain moderate periods, and we know from experience that the act of precipitation may continue indefinitely, perhaps forever, independent of evaporation of menstruum. It has never been stated, that I can find, in connection with this point, that at intervals the precipitate to a greater or less extent will dissolve, yet such is the case. Were it otherwise, a point would be reached when all of the dissolved matter would be thrown from solution, and consequently no further deposition could occur.

To illustrate how precipitates may increase and decrease, let us suppose that a fluid extract of senna has remained in an even temperature until an equilibrium has resulted, and the menstruum is capable of holding in solution every particle of the dissolved matters which remain above the

* I speak now of a rapidly circulating solution and a precipitate near its own gravity. If the section is moving slowly and the precipitate heavy, the particles of powder will either rest upon the plane of division, or, seeking the side of the vial next the heat, in obedience to the motion of the lower part of the stratum, will adhere to the glass.

† During the past six years I have carried on a series of experiments regarding this motion of fluids, but the example I have given is all that is necessary for the subject now under consideration.

* This may be nicely illustrated by introducing at the bottom of the tube a pellet containing a decided trace of potassium ferrocyanide, and dropping on the top of the liquid a little solution of a ferric salt. The formation of a blue precipitate in some intermediate stratum shows where the two come together.

sediment; perfect rest will now result and precipitation cease. A change in solvent power of the solution must take place before further precipitation can follow, and a change in temperature will be followed by either decreased or increased solvent power, and consequently by more or less precipitation, or re-solution of the precipitate.

Let us accept the former, that there is a decrease of temperature after a precipitate has ceased to form under a constant temperature. Another precipitate will result, which is entirely different from the former, and this precipitate can, to the greater extent, re-dissolve in the menstruum when the temperature increases. This precipitate, during the low temperature, settles to the bottom of the bottle, and, upon an increase of temperature, re-dissolves, giving us a dense layer of solution upon the bottom of the bottle. The solvent properties of this layer of solution differs from the liquid above, and as a consequence, certain portions of the precipitate previously cast down will dissolve. This dense warm liquid acts upon other constituents of the precipitate, and as these dissolve, the solvent power of the solution changes, and other portions of the precipitate dissolve, until finally a considerable amount of the precipitate has disappeared. During this time, circulation of the liquid has formed, perhaps more than one stratum at the bottom of the container, and, then, by the circulation I have exemplified in my previous experiments, there is a starting upward of this lower solution, and a downward motion of the upper. Finally, a condition will be reached in some portion of the liquid where, by the intermingling of the lower and the upper solutions, certain principles that were dissolved from the precipitate will become insoluble. This state is usually indicated by a cloudiness at the point of contact of two stratums, and the result is the formation of a precipitate. This precipitate will continue to form until the composition of the liquid within the container is again uniform and the strata have disappeared. Such a final state of affairs can only be reached under an unchanged temperature, and we know that, under ordinary circumstances, an even temperature for any length of time is impracticable. As a consequence, we may expect to have more or less of strata in our containers, and repeated precipitation and re-solution. Our precipitates will come and go with the changes of temperature, and there can be no rest. Thus is explained, as I stated at at the commencement of this article, how "continuous precipitation may be taking place without depleting the liquid of dissolved matters, and may continue for an indefinite period."

There is some difficulty in accurately studying the above-named phenomena, unless the experimentor will select some article that will yield much extractive and little coloring matter, but all who have observed the action of fluid extracts, and examined their precipitates at different stages, will recall many instances where the foregoing description of phenomena can be applied. In connection with this subject, I shall now introduce the notes of an experiment which illustrates the formation of a precipitate by the gradual admixture of different portions of a transparent percolate, and which will show us the workings of the strata currents under ordinary conditions.

May 5th, 1881. Eight troy ounces of powdered capsicum were properly moistened with dilute alcohol, and packed in a cylindrical percolator. The receiving vessel was an ordinary two-gallon salt-mouth bottle. Into the mouth of this the percolator was inserted, and to the exit of the percolator a rubber tube was attached. This tube extended to the bottom of the bottle, and the lower end of it was fixed to a cork, so that, as percolation progressed, the floating cork would hold the exit of tube at the surface of the liquid. By this arrangement, the percolate was collected in the order obtained, and without mixing, the lightest liquid being on top.

Description of Percolate.—The percolate passed transparent from the beginning until the end of the act of percolation. The lower portion of the liquid was dark-red in thin section, black as viewed in bulk. From the upper part of this dark layer, the color became gradually less and less in shade, until it passed to a light-straw color. This point was reached at a height of four inches above the dark layer; the remainder of the container (six inches) was of a uniform light-straw color, and doubtless would have remained so had the act of percolation been continued for days. This percolate consisted, then, of three parts—a lower solution rich in dissolved matters, a central solution, where there was a marked and rapid decrease in color from below upwards, and an upper liquid of uniform color, the proportion being as 3, 4, and 6. Undoubtedly the bottom of the lower section was most concentrated, although the color of the first three inches of solution was so deep as to forbid a comparison by the color test. However, the entire percolate had two points of distinct division, one where the color rapidly decreased from dark-red to light-red, and the other, where the change was rapid from light-red to yellow.

Changes.—The container was retained in the laboratory in the position where the act of percolation was accomplished. In two hours from the time of the cessation of percolation, a muddy layer of liquid appeared between the dark-red (lower) and light-red (overlying) solutions. In four hours, the entire light-red percolate was muddy; in six hours, it had resolved itself into three sections, each with distinct lines of demarcation. After twenty-four hours, particles of yellow precipitate appeared abundantly in the upper of these sections, and gradually settled to the surface of the second section; here there was a retardation of the motion of the particles and a diminution in the amount of precipitate, but finally it collected in large particles, and fell through the second dividing plane. As the precipitate passed through this second section, it decreased, and finally entered the heavy dark lower liquid, *where it entirely dissolved*. After seven days, the three central strata had resolved into two sections, and had become transparent, throughout which were clots of precipitates. The upper portion of the liquid in the bottle was very muddy, and gave rise to a constant rain of precipitates that gradually settled through the lower strata, dissolving as they passed, until only a very small amount reached the bottom of the bottle. These appearances were maintained for ninety days, at which time the liquid in the bottle had become transparent and of one color and composition; the strata and lines of demarcation had disappeared, a uniform yellow precipitate covered the bottom of the bottle, and a layer of oil-globules overspread the surface of the liquid.

Analysis of Phenomena.—The examination we have given the changes which occurred in the tube makes this example simple and readily understood. The percolate from the capsicum formed a liquid in the bottle that was concentrated at the bottom, and which became dilute with more or less regularity as we passed towards the surface. This association of different liquids under the influence of change of temperature, resulted in the formation of strata, and each stratum was circulating upon the principle of those of our tube, excepting that, as the temperature changed regularly over the surface of the entire cylinder, the circulation was from the outside of each section towards the centre of the bottle. This circulation, even without the aid of diffusion, gradually transferred the various portions of the liquid, effecting an even mixture.

Cause of Precipitation.—By referring to our article in the Proceedings of this Society for 1881, it will be found that, when different portions of ordinary percolates are mixed, precipitation is likely to result. Now, the precipitate under present consideration followed from the usual cause, a mixing of percolates. The concentrated solution at the bottom of the bottle was gradually transferred to the dilute solution above, and *vice versa*. This caused a precipitation of substances insoluble in the new solvents, and as the greatest change or strain results from the rapid dilution of the heavy solution, precipitation was most rapid at intermediate parts, or the upper portion of the liquid.

Resolution of the Precipitate.—It will be noticed that, after the precipitate was formed in the upper part of the liquid, it disappeared as it progressed towards the bottom of the bottle. This resolution resulted from the fact that

the lower strata were solvents for bodies that the upper could not hold in solution. Hence the gradual formation of the precipitate in the upper part of the bottle was followed by the resolution of the larger part as it slowly settled towards the bottom. Indeed, after seven days had passed, these aggregations of precipitate in the third stratum were in pieces as large as the first joint of the little finger, but these for a long time were almost entirely dissolved in their passage through the underlying strata, only reaching to the top of the lower liquid. It must be remembered that the lower solution gradually became more dilute, and that finally its solvent action was so decreased as to permit more or less of the precipitate to reach the bottom of the container.

The points I desire to present in this paper as a step further in our study of fluid extracts, may be summed up as follows:

We cannot hope to produce by percolation a line of permanent fluid extracts or tinctures, for most percolates will precipitate more or less, owing to aforementioned causes, even without a change in temperature. This precipitation theoretically, if we could maintain an unchangeable temperature, would continue until an equilibrium was established, and then the liquid could hold in solution all the dissolved principles. However, an unchangeable temperature is not practical under ordinary circumstances, hence it follows that occasionally the sediment is increased by a precipitation, which results simply from low temperature. This precipitate will redissolve when the temperature increases, the solution formed may act upon and dissolve more or less of the precipitate already present, and this stratum of liquid, by diffusion and circulation, will reach the upper portions of the container, to be altered in composition and precipitate again. Thus we find that, from natural causes, precipitation in fluid extracts made by percolation may continue indefinitely, and that these precipitates may periodically continue to increase or decrease, and that there is little chance for absolute rest. It follows, also, that even though we may prepare a fluid extract with great care, and shake the same until it is a uniform mixture, after a period it may be very different at the top and bottom of a container. This is explained by the fact that, after a decrease of temperature, a precipitate is formed, then an increase of temperature re-dissolves it, giving a lower stratum of liquid, perhaps *very* rich in some proximate principle.

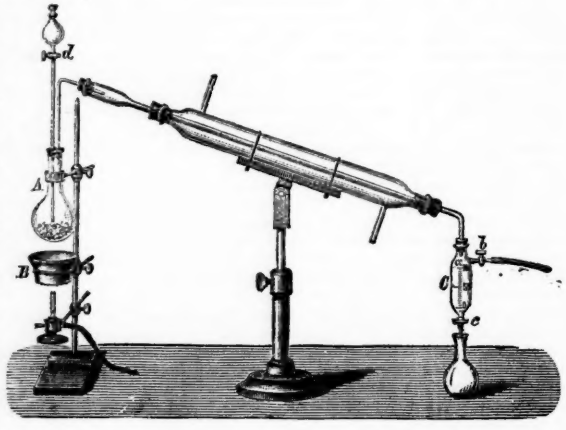
There are other phases connected with this subject, and from the manner in which my last article to the Society was received by pharmacists and manufacturers of pharmaceuticals, I am led to believe they would prove very interesting, but to consider them at this time would lengthen the paper and perhaps make it wearisome.

Determination of Volatile Acids in Liquids.

THE following method and apparatus have been devised by Kayser, and improved by C. H. Wolff, primarily for the determination of acetic acid in wine, but it is equally applicable for the estimation of volatile acids generally.

A long-necked flask *A*, of the capacity of 200 to 220 cubic centimeters, and firmly held by a clamp, is closed with a doubly-perforated rubber stopper. One of the perforations carries a funnel-tube, the globe of which has a capacity of about 60 *cc.*, and the lower end of which reaches about to the centre of the flask. The other tubulure contains the tube carrying off the vapors. Into the flask are placed a number of well-washed and dried pieces of pumice stone. The copper water-bath *B* contains a concentrated solution of chloride of sodium. The condenser is connected, air-tight, with a cylindrical and graduated receiver, closed below with a stop-cork, and provided with a lateral tube, containing a three-way stop-cock, which is connected with the aspirator or air-pump.

When the apparatus is to be used, about 50 *cc.* of the wine (or other liquid) are introduced into the globe of the funnel, and the air in the apparatus then exhausted by proper adjustment of the three-way stop-cock. When the vacuum is as complete as practicable (700 to 720 *mm.*), the stop-cock is turned so that the way to the receiver is closed, and air is admitted to the pump, after which the latter may be set at rest. Next, the copper vessel, containing the salt solution, together with the burner, is raised until the body of the flask is immersed in the solution. The liquid is now allowed to fall slowly, in drops, upon the hot pieces of pumice, where it is immediately converted into vapor, and, if the condensation is effective, drops at once into the receiver. When all the liquid has thus been consumed and the distillate measures nearly 50 *cc.*, the source of heat is removed, air is admitted to the apparatus (by properly turning *b*), and the distillate is then permitted to flow into the vessel placed under the receiver. The operation is then repeated four times more, with this difference, however, that 50 *cc.* of water are poured into the globe. The total amount of distillate, 250 *cc.*, is then assayed by means of decinormal solution of soda and tincture of litmus.—*Repert. d. anal. Chem.*, 1, 213.



Apparatus for Determination of Volatile Acids.

How do the Commercial Bismuth Preparations Compare with the Requirements of the United States Pharmacopœia?*

BY PROF. P. W. BEDFORD.

AT the time this query was accepted (as even now), the United States Pharmacopœia of 1870 was the guide by which this query should be answered.

The writer has, however, made his experiments in the light of the more exact and definite tests of the Pharmacopœia of 1880. The samples of bismuth examined were from Powers & Weightman, Rosengarten & Sons, E. R. Squibb, C. T. White & Co., C. Pfizer & Co., and Mallinckrodt & Co., and were the two salts almost exclusively used: the subnitrate and subcarbonate. The impurities sought for were lead, copper, silver, arsenic, alkaline earths, ammonia, chlorine, sulphuric acid.

Besides, the salts the writer examined specimens of metallic bismuth, one sample being from the new Australian source.

As the examination was so thoroughly satisfactory as to the medicinal qualities, no enumeration will be made as to the results of the examination of each individual maker, but the results may be embodied in a general statement. This may be given as follows: Each of the samples

* Read at the Meeting of the Amer. Pharm. Assoc.

of subnitrate and subcarbonate of bismuth examined was fully equal to the requirements of the Pharmacopœia of 1880; that in none of the specimens examined is there any lead, copper, silver, chlorine, or sulphuric acid. By a more rigid test than the United States Pharmacopœia exacts, there were traces of ammonia in two samples, in all there were traces of alkaline earths or salts, both due undoubtedly to imperfect washing of the precipitates in process of manufacture, yet in both the quantities were so minute that they were practically not noticeable in any analysis beyond a "trace."

The same may be said about arsenic, though in this a quantitative determination was made. The amounts present of arsenic varied from less than $\frac{1}{10}$ grain to 3 grains in 1,000 grains.

The specimen of Australian bismuth gave evidences of a trace of copper and arsenic, but neither were estimated.

The Average Amount of Caffeine in Guarana.*

BY J. H. FEEMSTER.

In reply to this query, I shall take up the three questions in the order presented.

1. What is the average amount of caffeine in the guarana of commerce as compared with that of the seeds?

From a select sample of seeds procured from Messrs. Lehn and Fink, of New York, I obtained five and eight hundredths (5.08) per cent of caffeine. Taking this as a basis of comparison, five samples of guarana of the usual cylindrical form were purchased from as many dealers, and with these, analyses were conducted, with the appended results. Five hundred grains of guarana were used in each case.

No. 1 yielded 21 grains caffeine or 4.2%.
No. 2 " 25 " " " 5%.
No. 3 " 21 " " " 4.2%.
No. 4 " 19.5 " " " 3.9%.
No. 5 " 21.5 " " " 4.3%.

The aggregate yield of caffeine from the five samples was one hundred and eight (108) grains, making the average per cent of the five determinations four and thirty-two (4.32) hundredths.

2. Determine a rapid and pharmaceutically correct method of getting at the percentage of caffeine from guarana.

The process employed in securing the above result was that recommended by Prof. E. S. Wayne for the extraction of caffeine from tea (*Amer. Journ. Pharm.*, 1875, p. 135), and afterwards used so successfully upon guarana by Dr. Francis V Greene, U. S. Navy (*Amer. Journ. Pharm.*, 1877, p. 337).

The directions for conducting the analysis are so full and explicit in the article of Mr. Greene that it would seem unnecessary to repeat them; but I will mention that the addition of a few drops of liquor plumbi subacet. to the boiling mixture of guarana, litharge and water, when the color begins to disappear from the solution, seems to facilitate the deposition of the insoluble portion, and to leave the liquid more free from coloring matter.

The crystals of caffeine from the solution thus treated are so white that recrystallizing from diluted alcohol is done away with.

The guarana and litharge require to be boiled about three hours before the solution, upon the subsidence of the solid matter, remains clear, and I was surprised to find when operating with the seeds that the change takes place less in one hour. The cause of this I leave open to future investigation. A plan for the extraction of caffeine from guarana, tea, or coffee, more free from objection than the one proposed by Prof. Wayne, would be found with difficulty.

It is so free from complications, and can be conducted with such rapidity and accuracy, that it is without hesitation I commend as the one best answering the second portion of this query.

3. Give the most desirable alcoholic menstruum that is adapted to the extraction of caffeine and the preparation of fluid extract of guarana.

Sixteen Troy ounces of guarana in moderately fine powder was moistened with two (2) ounces of a menstruum composed of alcohol, three (3) ounces (fluid ounces), glycerin, four (4) ounces, and water, five (5) ounces.

The drug was packed in a conical percolator (glass), the remainder of the twelve fluid ounces of menstruum poured on, and after the liquid had disappeared from the surface, it was followed with a mixture composed of alcohol (four fluid ounces) and water (twelve fluid ounces).

When the liquid began to drop from the lower orifice, a cork was inserted, and maceration continued for two days.

The percolation was then proceeded with, the first twelve fluid ounces reserved, and two pints more of percolate collected, the last portion of which was void of color and taste. This was evaporated to three fluid ounces, added to one ounce of alcohol, and mixed with the twelve fluid ounces reserved to make one pint of finished fluid extract.

The finished fluid extract kept bright and free from deposit for several months, but after that time a heavy chocolate colored precipitate formed, and upon examination was found to contain groups of crystals of caffeine.

* Read at the Meeting of the Amer. Pharm. Assoc. in answer to query 30, as follows:

"What is the average amount of caffeine in the guarana of commerce as compared with that of the seed? Determine a rapid and pharmaceutically correct method for getting at the percentage of caffeine. Give the most desirable alcoholic menstruum that is adapted to the extraction of caffeine and the preparation of fluid extract of guarana."

Preparation of Mercurical Ointment.*

BY EMLEN PAINTER, PH.G.

The above title having been the subject of very numerous short articles, which have appeared in pharmaceutical journals from time to time, during the past few years, it would seem there is but little room for more light to be thrown upon it now, yet in the preparation of this ointment by hand, I venture to offer a few practical hints in the manipulation. At the same time, I recognize the importance of the growing tendency of the times to the division of labor and that this preparation can be advantageously made by the obliging manufacturer by machinery.

Having had occasion to prepare several hundred pounds of mercurial ointment, and no suitable machinery available, led to my reviewing the many published articles on the subject, and giving the different methods proposed practical tests. For a considerable time, however, I was unable to prepare more than ten pounds a day with one man's labor, working very diligently, whilst now, with my present mode of proceeding, I can as easily prepare from forty to fifty pounds in a day.

The utensils required are two spatulas, eight inches and ten inches—I find the most convenient sizes—a marble slab at least two feet square, a shallow iron dish of one and one-half to two gallons capacity, and any suitable vessel for melting the fats required. Four or five pounds of mercury will be found the most convenient quantity to work upon in a single batch. If the smaller quantity is taken, add to it in the dish four ounces of any liquid (fixed oil answers admirably), and with one of the spatulas stir until the mercury is uniformly divided into small globules, which will take five minutes' time or less; next add four ounces of tallow, or if the tallow is too hard, take a mixture of tallow and lard, containing about twenty per cent of the latter, melted together (but allowed to get entirely cold before using), with the spatulas; break down the lumps of fat, and rub all together until uniformly mixed. Should a portion of the mercury separate on rubbing in the hard fat, a little persistence in stirring will divide it as before. The mixture will now present a somewhat granular appearance, and the globules of mercury, though small, will be easily discernible. Next remove it to the marble slab, and with the two spatulas, one in either hand, rub alternately, one hand relieving the other, so as to avoid getting the muscles of the hand and arm too tired. Rub loosely at first, or else

* Read at the Meeting of the Amer. Pharm. Assoc.

the globules of mercury will run together, but as they are reduced in size, it can be rubbed closer to the slab, and with more pressure. A little tincture of benzoin can now be added to advantage; it will serve a double purpose, of aiding in the division of the globules and preserving the ointment from rancidity. In divided portions, then continue rubbing with the spatulas until globules of mercury are no longer visible, after which return it to the iron dish; add eight ounces more of oil, stir together, and then add a mixture of equal parts of tallow and lard, melted together, and in a liquid state (160° to 180° F.), sufficient to make eight pounds in all. Stir continuously, until the whole stiffens, frequently scraping from the bottom and sides of the dish. Again remove the ointment to the marble slab, and rub it in divided portions to measure a uniform mixture, and the division of any stray globules of mercury.

The result is a dark-colored, smooth ointment, if pains are taken to carry out the details. It is of importance to have the melted fat neither too hot nor too cold; in either case the ointment is apt to be granular, to require a great deal more rubbing, and the finished product will be much lighter in color, and otherwise not so satisfactory. I do not claim novelty for the whole of my porcess for making mercurial ointment; it is merely a modification of the suggestions of different writers, which, in my experience, results in saving much labor; the chief point being in completely extinguishing the mercury with the least quantity of fat, when it can afterwards be mixed with any required amount in a melted state without much trouble, and the ointment does not separate after it is cold. If, however, warm fat is used in the first instance before the mercury is thoroughly divided, globules will separate when rubbed or even cut with a spatula becoming entirely cold.

San Francisco, August, 1882.

The Alcoholic Strength of the Fluid Extracts of Commerce.*

BY ADAM CONRATH.

In order to solve this query in the most satisfactory way, and with the least trouble, I selected the fluid extracts from four manufacturers most used in this locality.

The preparations from twelve drugs, in which the different formulas of the Pharmacopœia are represented, were taken from each manufacturer.

Then, for comparison, I made the same preparations strictly according to the Pharmacopœia, taking, however, no more than ordinary precaution in the selection of the drugs and the prevention of evaporation.

The drugs were not subjected to drying, but were used as found on the shelf. The temperature of the room in which the preparations were made varied between 60° and 70° F.; all these experiments were made during February, 1882.

The mode of estimating the percentage of alcohol was as follows:

25 *cc.* of the fluid extract were placed into a 4-ounce flask, the pipette rinsed with 25 *cc.* of water, and this added to the extract. Distillation was then proceeded with until from 35 to 45 *cc.*, according to the nature of the extract, had distilled over. The distillate was diluted with distilled water to measure 50 *cc.*, and the spec. gr. of this taken at 60° F. The alcohol per cent was therefrom deduced according to Stampfer's table in Hager's Ph. Praxis. The percentage thus found multiplied by two was placed down as the amount in 25 *cc.* of the extract. The preparations of No. 1 were taken from open packages on the shelf. Those of No. 2, No. 3, and No. 4 were taken from unbroken packages kindly placed at the disposal of the writer by a wholesale firm of this city.

In addition to the estimation of the alcohol, the specific gravity of each extract was also taken.

* Read at the Meeting of the Amer. Pharm. Assoc.

	No. 1		No. 2		No. 3		No. 4		Pharmacopœia.	
	Sp. Gr. of Extract.	Sp. Gr. of Distll.	Sp. Gr. of Extract.	Sp. Gr. of Distill.	Sp. Gr. of Extract.	Sp. Gr. of Distill.	Sp. Gr. of Extract.	Sp. Gr. of Distill.	Sp. Gr. of Extract.	Sp. Gr. of Distill.
Ext. Belladonnæ Rad. fl.	1.035	.9720	0.958	.9680	1.000	.9697	1.002	.9714	1.064	.9745
" Digitalis	0.936	.9667	1.001	.9776	1.054	.9762	0.988	.9659	0.893	.9532
" Buchu	0.893	.9524	0.862	.9474	0.965	.9681	0.937	.9597	1.141	.9893
" Gelsemii	1.069	.9814	0.953	.9695	0.932	.9595	0.944	.9628	1.092	.9700
" Cinchonæ	1.062	.9705	0.981	.9757	1.007	.9757	1.022	.9781	1.074	.9700
" Senegæ	1.014	.9723	0.999	.9742	1.011	.9747	0.995	.9671	1.119	.9813
" Ergotæ	1.024	.9769	1.009	.9798	0.973	.9739	1.026	.9739	1.054	.9785
" Ipecacuanhæ	0.978	.9728	0.988	.9804	1.006	.9769	0.997	.9728	1.141	.9893
" Pruni Virg.	1.129	.9880	0.932	.9614	0.999	.9739	1.090	.9950	1.092	.9700
" Rhei	1.110	.9728	1.005	.9696	0.996	.9694	1.026	.9700	1.074	.9700
" Sennæ	1.052	.9785	1.009	.7945	0.994	.9659	1.044	.9768	1.177	.9913
" Valeriane	0.856	.9445	0.868	.9481	1.017	.9739	0.918	.9503	0.860	.9470
	48	89	56	85	52	63	50	65	43	86
	64	80	37	86	40	56	60	70	43	79
	46	18	32	67	38	44	46	67	30	16
	46	46	53	53	53	60	38	52	52	52
	36	46	44	53	60	63	65	52	52	52
	38	46	33	41	44	42	44	56	36	30
	48	50	44	41	42	41	36	56	30	30
	31	50	48	48	56	70	65	70	79	79
	80	64	86	37	40	56	70	60	43	43
	64	37	37	56	52	63	50	60	43	43

Davidson's Ozone Generator.

Mr. John M. Davidson, of New York, is the inventor of an ozone generator (Pat. No. 254,930), which is described by him as follows:

"Ozone-generators have been made with a float to carry the phosphorus, and another float with a stop against which the phosphorus is pressed, so that a certain portion of the phosphorus is exposed to the action of the moist vapors for the production of ozone.

"My invention is made for the purpose of insuring a more perfect presentation of the phosphorus to the action of the air and moisture, for simplifying the apparatus and lessening its cost, and for allowing the phosphorus to be entirely immersed when not required for use. I make use of a guide-tube that is maintained in a vertical position by the joint action of an annular float and a float that raises the phosphorus, and I use a removable weight to insure steadiness to the guide-tube.

"The guide-tube *a* is preferably of glass; but it may e of other material. It is provided at its upper end with an annular displacer or float, *b*, that is sufficient, or nearly so, to cause the tube *a* to assume and maintain a vertical position within the water in the vessel that forms the holder. This guide-tube *a* is weighted at its lower end by glass or

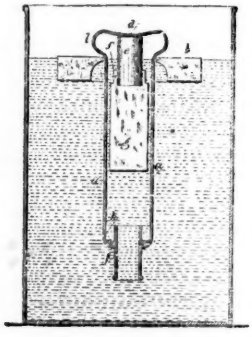
other material, *f*, introduced into an elastic stopper, *h*, that is inserted in the lower end of the tube *a*.

"There is a stop or finger, *d*, at the top end of the guide-tube *a*, the same being formed of a cross-bar, or of a perforated bulb, *l*, and the stick of phosphorus, *e*, is held in a cup, *f'*, and raised by a float *g*, so that its upper end is constantly pressed against the stop or finger *d*, and the floating power of the float *g* is sufficient to lift the phosphorus, and also to partially raise the guide-tube and prevent it sinking in the water.

"The float *b* is recessed at its under surface around the opening for the guide-tube, so that when the float is reversed, as seen in Fig. 3, the guide-tube will sink down deeper in the water than it will when the float is in its normal position, as shown in Fig. 1, thereby allowing for the phosphorus being entirely immersed and protected from atmospheric action, so as to stop the generation of ozone.

"By my improvement the guide-tube is kept in a vertical position, the flat float retains the phosphorus-holder in a nearly central position in the liquid, the perforated cap at the top of the glass holder prevents the atmosphere coming into contact with the phosphorus to such an extent as to cause its ignition, and the generation of ozone can be carried on or stopped at pleasure by simply reversing the float.

"There is an opening for the liquid to pass freely into and out of the guide-tube. This opening may be in the side of the tube; but it is preferably through the stopper, as shown."



Davidson's Ozone Generator.

Creasote from Beech-Wood Tar.

PURE creasote obtained from beech-wood tar, and consisting of guaiacol and creasol, is, according to Hartmann and Hauers in Hanover (Germ.), a neutral, clear, pale-yellowish, never reddish or brownish, liquid, which does not acquire, either by age or by exposure to sun-light, a darker tint than that of Rhine-wine. It is strongly fluorescent, and has a smoky but no acrid odor. Spec. grav. 1.070 at 15.6° C. (60° F.); boiling point 205° to 225° C. (401°–437° F.). It is soluble in 200 parts of water.

If 1 *cc.* of creasote is shaken with 5 *cc.* of water, the latter should not acquire either an acid or an alkaline reaction. 2 *cc.* of creasote, shaken with 8 *cc.* of water and 2 *cc.* of solution of soda (of spec. grav. 1.33), should yield a light yellow, entirely clear liquid, free from opalescence, and not separating any oily drops 2 *cc.* of creasote, shaken in a dry test-tube with 4 *cc.* of benzin, should yield a clear solution at the usual in-door temperature. If the solution is not complete, the presence of a somewhat considerable quantity of carbolic or cresylic acids is indicated. If the solution was complete and a few drops of water are afterwards added to it, with strong agitation, no oily layer should separate between the water and the benzin-solution, on cooling the mixture down to 20° C. (68° F.). If such a layer separates, carbolic or cresylic acids are probably present, though in smaller proportions. On shaking the benzin-solution with about 4 *cc.* of a cold-saturated solution of barium oxide, the benzin-solution should acquire no blue or dirty color, nor should the aqueous solution turn red. These color-reactions betray the presence of other constituents of wood-tar oil. On shaking 2 *cc.* of creasote with 2 *cc.* of collodion, the mixture should not become gelatinous. From a mixture of 9 *cc.* of glycerin of spec. grav. 1.230, 3 *cc.* of water, and 4 *cc.* of creasote, the latter should completely separate on standing.

Dr. Ferd. Fischer, one of the editors of *Dingler's Polytechnisches Journal*, from which (vol. 245, page 91) we quote the above, adds, that no creasote of this degree of purity has heretofore been in the market; in fact, he declares that made by Hartmann and Hauers, of Hanover, to be perfectly pure.

The Castor Oil Plant a Possible Fly Poison.

A BOTANIST of Limoges (France) asserts that, having placed a castor oil plant in a room infested with flies, they all disappeared as if by enchantment. He afterwards found under a castor oil plant a large number of dead flies, all on the under surface of the leaves. M. Rafford, the author of these remarks, believes that some toxic principle or essential oil exists in the leaves of the castor oil plant which is very destructive to insect life. It would be interesting to find out whether a decoction of the leaves of the Ricinus communis would destroy the green aphis and other noxious insects which affect roses, etc. Castor oil plants are much used in France as ornamental objects in rooms. They will now be doubly prized for this purpose.—*The Monthly Magazine of Pharmacy.*

Manufacture of strong Parchment-Paper Impervious to Water.

ACCORDING to the *Journ. Soc. of Arts*, a strong, impervious parchment-paper is obtained by thoroughly washing woolen or cotton fabrics, so as to remove gum, starch, and other foreign bodies, then to immerse them in a bath containing a small quantity of paper pulp. The latter is made to penetrate the fabric by being passed between rollers. Thus prepared, it is afterwards dipped into sulphuric acid of suitable concentration, and then repeatedly washed in a bath of aqueous ammonia until every trace of acid has been removed. Finally, it is pressed between rollers to remove the excess of liquid, dried between two other rollers which are covered with felt, and lastly calendered.

Iodine in Malaria.

DR. R. B. MORISON reports in the *Maryland Medical Journal* two hundred and fifty cases of malaria treated with tincture of iodine, in fifteen-minim doses, largely diluted, a quarter-hour before meals. His cases show an even more favorable result than where cinchonidia is employed, and he states that iodine is now the routine treatment in all cases of acute malaria coming to the dispensary. Similar observations are reported in the *Indian Medical Gazette* for January by Buboo Brojendry Nath Bamergee, at the meeting of the Calcutta Medical Society. He states that since 1878 he has made large use of this method of treatment, and in 1879 published in the Calcutta *Medical News* that he had cured ninety per cent of five hundred cases. Since then, however, he has been led to distrust the reliability of his results, and believes that many of his earlier trials were made in cases which recover spontaneously, while others of these cases last, even under no treatment, only one day. Under such circumstances, any drug will appear to act like magic. His present belief is that iodine will prove serviceable in about half the cases. The same author also reports cases in which burnt alum appeared to be of service.

Peppermint Oil in Herpes Zoster.

DR. J. MEREDITH, of Birmingham, Eng., finds peppermint oil, applied locally, to be capable of rapidly allaying the pain of herpes zoster.

On the Preparation of Phosphoric Acid by the Oxidation of Phosphorus with Atmospheric Air, in the Presence of Moisture.*

BY PROF. W. T. WENZELL, PH.G., M.D.

A PRELIMINARY paper announcing some experiments and results, favorable to the preparation of phosphoric acid by moist oxidation, was read at a quarterly meeting of the California Pharmaceutical Society, held in July, 1882.

Since then, further experiments were made, with the view of devising a process by which the principles herein involved could be carried out in a practical way, and free from danger; that phosphoric acid might be prepared easily, and in any quantity by this process, was suggested by the following incident.

A common ointment jar containing a half pound of phosphorus (the sticks were in a vertical position immersed in water) loosely covered and kept in a basement, where the temperature usually varies between 58° and 65° F. On taking off the cover, at the expiration of four months, it was noticed that not only two-thirds of the water had evaporated during that time, but that a relative quantity of the phosphorus had also disappeared, the upper ends of the sticks presenting the appearance of being, as it were, smoothly cut to the level of the water. The liquid was not only very acid, but was also very dense, of a somewhat oily consistence.

That phosphoric and phosphorous acids are produced by the oxidation of phosphorus in moist air, is certainly not new; but I could not find, in the various standard works on chemistry I then consulted, that this process had ever been applied or recommended as a method for the production of phosphoric acid. It was only of late, and after the completion of my experiments that I happened to find in Mohr's Commentary to the Prussian Pharmacopœia for 1850 mentioned, that phosphoric acid might be made by a process of slow oxidation in air. F. Mohr recommended to have a stick of phosphorous put into a glass tube narrowed at one end; to have a number of such tubes laid into a glass or porcelain funnel, the end of which (the funnel) dipping into a flask containing water. The phosphorus oxidized, as was stated, very slowly, emitting a luminous vapor, which gave out an odor resembling that usually observed, when sparks from a powerful electrical machine are passed through air (ozone).

Mohr admitted that it was rather slow, as to results. He mentions, also, a process recommended by Doebereiner, which directs to put into the bottom of a flat porcelain dish, pounded glass to the depth of an inch, to cover the pounded glass nearly with water, and lay thereon any suitable number of phosphorus sticks, taking care to prevent their touching each other; the whole to be covered with a bell glass. Oxidation, by this process, is stated to be more rapid than that of Mohr's.

I have found that a simple arrangement for the aërial oxidation is had in an ordinary infusion jar. A pint jar holding seven fluid ounces up to the perforated diaphragm will answer for three hundred and sixty grains of phosphorus (the officinal quantity); a quart jar holding ten fluid ounces to diaphragm, will be suitable for seven hundred and twenty grains. The phosphorus in the form of sticks is laid upon the diaphragm, a sufficient quantity of water is poured into the jar to immerse the sticks to about half of their diameter; and the lip of the jar closed by pasting paper over its mouth, or inserting a rubber cork. The top of the jar having previously been ground true and smooth, was then covered with a porous disk of plaster-of-paris, about one-eigth of an inch thick.

The jar having been thus prepared, oxidation of the phosphorus will commence at once, and will continue regularly, requiring no attention until after the expiration of one week. At this time the phosphorus will be found to have disappeared to the surface of the water. It will now be necessary to pour off a portion of the acid liquid in order to expose the lower half of the phosphorus to the influence of moist oxidation, taking care to replace the porous disk. During the course of the second week, the acid fluid may require to be poured off more than once, owing to an increase in its volume.

To prepare a larger quantity of the acid, a leaden tray was provided and so constructed as to make the process more automatic in its effects. This arrangement, capable of oxidizing eight ounces of phosphorus, measured in the clear, nine inches in length, five in width, and three in depth. On the inner sides, about one and a half inches from the bottom, a narrow shelf gave support to a grating of sheet lead having eight narrow slits, cut transversely, on which the phosphorous sticks are laid with about half an inch space between. The upper edge of the tray was smoothed to fit a porous cover of plaster-of-paris, having a thickness of half an inch. Into one of the end sides of the apparatus, as near as possible to the bottom, a round hole was provided and a rubber cork inserted, through which a glass tube was passed bent at a right angle, the bent limb being just of a length to reach accurately the leaden grating, when the latter was placed in situ, within the tray. Attached to the limb of the tube, and parallel to it, another glass tube was cemented, the upper end on a level with the limb of the bent tube, and extending about half an inch below the bend of the other tube. The apparatus being thus arranged, the bent end of the tube was stopped with a well-fitting plug, the phosphorus laid upon the slit ends of the grating, and a sufficiency of water poured into the tray to half immerse the sticks, and the apparatus finally covered with the plaster-of-paris tile, which should fit the tap of the tray sufficiently close, so as not to allow any fumus to escape.

In about a week the cover may be lifted, when, if the phosphorus is nearly or entirely reduced to the level of the liquid, the plug may be removed, and the acid fluid allowed to drain into a suitable receiver, without changing the position of the apparatus. Then replace the porous tile, and if the upper extremity of the bent tube has been so adjusted, so that the level of the liquid in the tray will just about touch the lower segments of the phosphorus sticks. The final oxidation will be, from this on, entirely automatic, and no further attention is necessary until the phosphorus is consumed. For, from this stage of the process on to the end, there will be a continual augmentation in volume of the acid fluids; it is by means of the bent tube that the surplus is drained off, and thus the acid liquid in the tray kept at the same level. When the process is completed, the acid solution may be drawn off by turning the bent limb of the glass tube down.

The leaden tray was used only on an experimental basis, and is not to be recommended, inasmuch, as a certain amount of lead phosphate is unavoidably formed, which is sufficiently soluble in the acid fluid to contaminate it. An apparatus made of white pottery, glaced to resist acids, is no doubt the best. A tray and grating made of gutta percha may possibly answer.

The products of the moist aërial oxidation of phosphorus are known as follows:

Phosphoric acid, H_3PO_4.
Phosphorous acid, H_3PO_3.
Ozone, O_3.
Hydrogen peroxide, H_2O_2.
Ammonium nitrate, NH_4NO_3.

Phosphoric acid is produced by far in the largest proportion, next in importance, as to quantity, will be found phosphorous acid, then ozone and hydrogen peroxide are formed according to the elaborate investigations of Prof. Leeds, in equal molecular proportions. Ammonium nitrate, a concomitant of this process, is produced in small quantities.

(To be continued.)

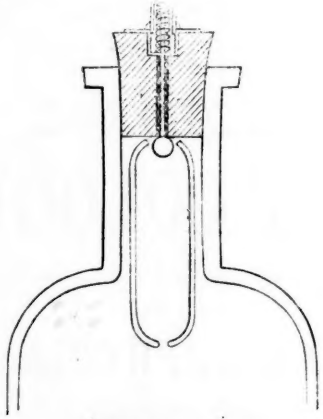
* Read at the Meeting of the Amer. Pharm. Assoc.

St. Louis Druggist.—This is the title of a new weekly journal of fifty pages quarto containing mixed editorial matter, advertisements, and prices current. It is edited by J. A. Peters, M.D. (lately of New York), and costs $2.00 per year.

A New Measuring Stopper.

MR. B. B. LEWIS, of West Stratford, Ct., has recently invented a device for measuring medicines or other fluids, which is here illustrated. It consists of a glass vessel, open at both ends and attached to the stopper in such manner that the fastening forms a valve for one opening and holds the device securely in the neck of the vial or bottle. By turning the vial upside downward and pressing on the button, the hole nearest the stopper is opened, and as the air in the measuring tube escapes through the opposite opening, the fluid will take its place. The pressure on the button then being removed, and the vial restored to an upright position, the stopper with the measuring vessel and its contents can then be removed. By pressing again on the button, air enters the upper opening and the liquid flows out of the one below.

This device has the following to recommend it, viz.: It is more accurate than measurement with a spoon. It can be used in the dark or by those who are blind. It can be used by those whose hands are unsteady. It dispenses with the need for another measure, and in the case of infants or small children especially, the lower end of the measuring vessel can be taken directly into the mouth during the discharge of the dose. Moreover, being made of glass, it is not, like a metallic spoon, liable to corrosion.



Lewis' Measuring Stopper.

Comparative Value of Disinfectants.

THE Imperial Board of Health, of Berlin, have published a number of experiments by Dr. Koch, made with a view to establishing the true value of a number of reputed disinfectants, of which the following is a brief summary:

Most surgeons have been satisfied to wash their hands and clean instruments with a two-per-cent solution of carbolic acid. Such a solution is almost inert, and a five-per-cent solution is necessary for the purpose. Still more interesting is the statement that carbolic acid, dissolved in oil or alcohol, proved to be totally inert, and had not the slightest effect on the vitality of micrococci or bacilli.

Concerning sulphurous acid, it was found to be powerless against spores; bacilli and micrococci, when exposed to the fumes in a box, were killed within twenty minutes, but were very little influenced, or not all, when exposed to the fumes in a room at the usual temperature.

Chloride of zinc showed itself just as harmless. A five per cent solution exerted absolutely no influence on the spores of anthrax, notwithstanding the same had been exposed to the action of the remedy for a period of thirty days.

Of other drugs, the spores of the bacilli were killed by chlorine water, fresh prepared; two per cent bromine water, one per cent aqueous solution of corrosive sublimate, five per cent solution of permanganate of potassium, one per cent osmic acid, within one day; formic acid, four days; oil of turpentine, five days; solution of chloride of iron, four days; one per cent arsenious acid, one per cent quinine (water with muriatic acid), two per cent muriatic acid, within ten days; ether within thirty days.

Inert or possessing very little influence: distilled water, alcohol, glycerin, oil, carbon disulphide, chloroform, benzol, petroleum-ether, ammonia, concentrated solution of common salt, bromide and iodide of potassium, one per cent sulphuric acid, sulphate of zinc and copper, alum, one per cent permang. of potash, chromic acid, the chromates and bichromates, chlorate of potash five per cent, boracic acid five per cent, acetic acid five per cent, tannic acid five per cent, benzoate of sodium five per cent, quinine (two per cent in water forty, alcohol sixty), iodine (one per cent in alcohol), thymol (five per cent in alcohol), salicylic acid (one per cent in alcohol, two per cent in oil).

As regards remedies which prevent the further development of spores, the following results were obtained. The first number means retarding the development, the rest totally preventing it:

Corrosive sublimate	1 : 1,600,000	1 : 320,000
Oil of mustard	1 : 330,000	1 : 33,000
Arsenite of potash	1 : 100,000	1 : 10,000
Thymol	1 : 80,000	
Ol. terebinth	1 : 75,000	
Hydrocyanic acid	1 : 40,000	1 : 8,000
Oil of peppermint	1 : 33,000	
Chromic acid	1 : 10,000	1 : 5,000
Picric acid	1 : 10,000	1 : 5,000
Iodine	1 : 5,000	
Salicylic acid	1 : 3,300	1 : 1,500
Permang. of potash	1 : 3,000	
Muriatic acid	1 : 2,500	1 : 1,700
Camphor	1 : 2,500	
Eucalyptol	1 : 2,500	
Benzoic acid	1 : 2,000	
Borax	1 : 2,000	1 : 700
Carbolic acid	1 : 1,250	1 : 300

But as, for purposes of disinfection, the micro-organism must be killed, and in the shortest possible period, and the effect of retarding the development of the spores (antiseptic) is not sufficient, only the following remedies can, according to Koch's experiments, be said to be of value: corrosive sublimate, chlorine, bromine, iodine. Bromine in form of vapor is, as concerns rapidity of action, superior to chlorine and iodine.—*Medical and Surgical Reporter.*

To Clean Brass.

THE government method prescribed for cleaning brass, and in use at all the United States arsenals, is claimed to be the best in the world. The plan is to make a mixture of one part common nitric acid and one-half part sulphuric acid, in a stone jar, having also ready a pail of fresh water and a box of sawdust. The articles to be treated are dipped into the acid, then removed into the water, and finally rubbed with sawdust. This immediately changes them to a brilliant color. If the brass has become greasy, it is first dipped in a strong solution of potash and soda in warm water; this cuts the grease, so that the acid has free power to act.

Atropine as a Cause of Glaucoma.

COMMUNICATIONS from Mr. Snell and Mr. Streatfield, published in the *British Medical Journal* of July 15th and 29th, call attention to the influence of atropine as used in ophthalmic practice in producing glaucoma. It would thus appear that the employment of the "Liquor Atropiæ" and "Liquor atropiæ sulphatis" Ph. Br. (gr. iv. ad fl. ʒ i.) is capable of producing this disease in some cases. The experiments of Dr. S. Ringer show that mydriasis will follow the use of a solution so dilute that chemists would consider the atropine but a mere trace, and the editor recommends the dilution of the officinal solution with two or three hundred times its bulk of water.

On the Assay of Spirit of Nitrous Ether.

In our last May number we published an article on the above subject, by Prof. J. F. Eykman, of Tokio, which requires a supplement, in the shape of a table for finding the amount of nitrite of ethyl from the ascertained data. It was impossible for us, at the time, to append the table, but we insert it here:

Table giving the value

of $\frac{H-e}{273+t}$. 0.1207 in the formula $\frac{V}{S\times a}$. $\frac{H-e}{273+t}$. 0.1207.

—(New Rem., 1882, p. 141.)

For calculating the percentage of ethyl nitrite ($C_2H_5.O.NO$) represented by the quantity of evolved NO gas, the figure in the following table corresponding to the observed temperature and pressure should be multiplied by the value $\frac{V}{S\times a}$, in which V = volume of the evolved gas in cubic centimeters, S = specific gravity of the spirit of nitrous ether, and a = the number of cubic centimeters of the spirit used in the analysis:

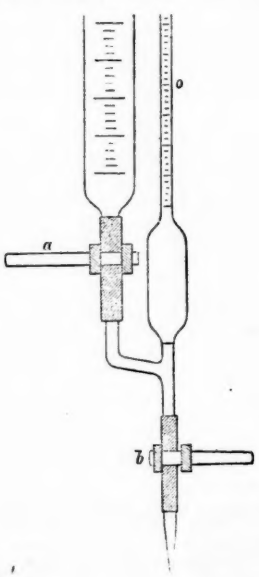
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°
750 mm.	0.3295	0.3282	0.3269	0.3255	0.3241	0.3228	0.3214	0.3201	0.3187	0.3174	0.3160	0.3146	0.3132	0.3118	0.3104	0.3090
751 "	0.3300	0.3287	0.3273	0.3259	0.3246	0.3232	0.3218	0.3205	0.3191	0.3178	0.3164	0.3150	0.3136	0.3123	0.3108	0.3094
752 "	0.3304	0.3291	0.3277	0.3264	0.3250	0.3236	0.3223	0.3209	0.3196	0.3182	0.3168	0.3154	0.3141	0.3127	0.3113	0.3098
753 "	0.3309	0.3295	0.3282	0.3268	0.3254	0.3241	0.3227	0.3214	0.3200	0.3186	0.3173	0.3159	0.3145	0.3131	0.3117	0.3103
754 "	0.3313	0.3300	0.3286	0.3272	0.3259	0.3245	0.3231	0.3218	0.3204	0.3191	0.3177	0.3163	0.3149	0.3135	0.3121	0.3107
755 "	0.3317	0.3304	0.3291	0.3277	0.3263	0.3249	0.3236	0.3222	0.3209	0.3195	0.3181	0.3167	0.3153	0.3139	0.3125	0.3111
756 "	0.3322	0.3309	0.3295	0.3281	0.3267	0.3254	0.3240	0.3227	0.3213	0.3199	0.3185	0.3171	0.3158	0.3144	0.3129	0.3115
757 "	0.3326	0.3313	0.3299	0.3286	0.3272	0.3258	0.3244	0.3231	0.3217	0.3204	0.3190	0.3176	0.3162	0.3148	0.3134	0.3119
758 "	0.3331	0.3317	0.3304	0.3290	0.3276	0.3262	0.3249	0.3235	0.3221	0.3208	0.3194	0.3180	0.3166	0.3152	0.3138	0.3123
759 "	0.3335	0.3322	0.3308	0.3294	0.3280	0.3267	0.3253	0.3239	0.3226	0.3212	0.3198	0.3184	0.3170	0.3156	0.3142	0.3128
760 "	0.3340	0.3326	0.3312	0.3299	0.3285	0.3271	0.3257	0.3244	0.3230	0.3216	0.3202	0.3188	0.3175	0.3161	0.3146	0.3132
761 "	0.3344	0.3331	0.3317	0.3303	0.3289	0.3275	0.3262	0.3248	0.3234	0.3221	0.3207	0.3193	0.3179	0.3165	0.3150	0.3136
762 "	0.3348	0.3335	0.3321	0.3307	0.3293	0.3280	0.3266	0.3252	0.3239	0.3225	0.3211	0.3197	0.3183	0.3169	0.3155	0.3140
763 "	0.3353	0.3339	0.3326	0.3312	0.3298	0.3284	0.3270	0.3257	0.3243	0.3229	0.3215	0.3201	0 3187	0.3173	0.3159	0.3144
764 "	0.3357	0.3344	0.3330	0.3316	0.3302	0.3288	0.3275	0.3261	0.3247	0.3234	0.3219	0.3205	0.3191	0.3177	0.3163	0.3149
765 "	0.3362	0.3348	0.3334	0.3320	0.3307	0.3293	0.3279	0.3265	0.3252	0.3238	0.3224	0.3210	0.3196	0.3182	0.3167	0.3153
766 "	0.3366	0.3353	0.3339	0.3325	0.3311	0.3297	0.3283	0.3270	0.3256	0.3242	0.3228	0.3214	0.3200	0.3186	0.3171	0.3157
767 "	0.3371	0.3357	0.3343	0.3329	0.3315	0.3301	0.3288	0.3274	0.3260	0.3246	0.3232	0.3218	0.3204	0.3190	0.3176	0.3161
768 "	0.3375	0.3361	0.3348	0.3334	0.3320	0.3306	0.3292	0.3278	0.3264	0.3250	0.3236	0.3223	0.3208	0.3194	0.3180	0.3165
769 "	0.3379	0.3366	0.3352	0.3338	0.3324	0.3310	0.3296	0.3283	0.3269	0.3255	0.3241	0.3227	0.3213	0.3198	0.3184	0.3170
770 "	0.3384	0.3370	0.3356	0.3342	0.3328	0.3314	0.3301	0.3287	0.3273	0.3259	0.3245	0.3231	0.3217	0.3203	0.3188	0.3174
771 "	0.3388	0.3374	0.3360	0.3346	0.3332	0.3318	0.3305	0.3291	0.3277	0.3263	0.3249	0.3235	0.3221	0.3207	0.3192	0.3178
772 "	0.3392	0.3379	0.3365	0.3350	0.3337	0.3323	0.3309	0.3296	0.3281	0.3268	0.3253	0.3239	0.3225	0.3211	0.3197	0.3183

On the Manufacture and Correction of Burettes.

BY DR. WILH. OSTWALD.

While the most important instrument of the analyst—the balance—has long been brought to a point of accuracy which even exceeds the requirements of ordinary practice, the next important instrument, the burette, the use of which is constantly increasing, has been comparatively neglected. As a rule, burettes are purchased on trust from the manufacturer, but I have never found a single one which was absolutely free from error.

A simple method to determine the "error" of a burette consists in filling it with distilled water at the normal temperature, then to draw off successive portions of five or ten *cc.* in a small, tared flask, and to weigh these portions. The weight represents the quantity contained between the divisions; and the difference between the quantity of water read off on the burette, and determined by weighing, constitutes the "error" for the particular portion of scale examined. The weighings need be only moderately accurate (within a few milligrams), and require but a short time. This method may be used when it is occasionally required to examine a single burette. If, however, the task is to be frequently repeated, the apparatus here illustrated may be profitably employed.



The upper tube of a pipette of 2 or 5 *cc.* capacity is divided so that $\frac{1}{100}$ *cc.* may be directly read off, and $\frac{1}{1000}$ *cc* may be estimated. The scale need only extend a few tenth cubic centimeters on either side of 0, but must be as accurate as possible. Below the bulb, a lateral tube is fused on, which rises parallel with the pipette, and is cut off a short distance from the bend. This tube is connected with the burette by means of a rubber tube and pinch-cock. A second pinch-cock is attached to the outlet of the pipette. At first, the burette is filled with distilled water, care being taken that no air-bubbles remain in the connecting tubes. By opening the stop-cock at *a*, the level of water in the burette is brought exactly to the mark 0; and then, by opening stop-cock *b*, the water which has entered the pipette is allowed to run off until its level stands exactly at the lower mark of the scale; *a* is then again opened, and the level of water in the burette allowed to sink exactly to the mark 2. The true volume of this is then read off in the pipette with an accuracy of one-thousandth of a cubic

centimeter, by estimating the fraction of the column of liquid between two divisions of the scale (each of which is equal to $\frac{1}{100}$ *cc.*). After again emptying the pipette to the lower mark, the space between the divisions 2 and 4 in the burette may be exactly measured, and so on. Each single measurement, after some practice, requires less than one minute, so that a burette of 30 *cc.* may be easily examined inside of fifteen minutes.

The table of corrections is constructed by adding, successively, the corrections belonging to the quantities (2 *cc.*) examined, interpolating the mean of these values for the intermediate quantities (of 1 *cc.*), and rounding off the obtained values to two figures: Example:

Read off with The measuring pipette.		*Correction.*	*Correction between 0 and*		*Interpolation.*
				1	+ 0.003
Between 0 and	2	2.006	+ 0.006	2	+ 0.006
				3	+ 0.011
" 2 and	4	2.010	+ 0.010	4	+ 0.016
				5	+ 0.020
" 4 and	6	2.008	+ 0.008	6	+ 0.024
				7	+ 0.023
" 6 and	8	1.998	− 0.002	8	+ 0.022
				9	+ 0.020
" 8 and	10	1.994	− 0.006	10	+ 0.018

Table of Correction:

From 0 to	1,	2,	3,	4,	5,	6,
Corr.:	± 0.00,	+ 0.01,	+ 0.01,	+ 0.02,	+ 0.02,	+ 0.02,

7,	8,	9,	10.
+ 0.02,	+ 0.02,	+ 0.02,	+ 0.2.

This calculation is correct, provided the pipette holds exactly 2 *cc.* between its upper and lower marks. In order to determine this, or to ascertain the error (and, therefore, the necessary correction) of the pipette, the latter is filled and emptied some ten or twenty times into a tared glass vessel, and the water carefully weighed. Supposing it had been emptied fifteen times, and the water was found to weigh 29.9625 *gm.* instead of 30.000, then the pipette contained 1.9975 *gm.* of water instead of 2.0000 *gm.*, and was, therefore, too small by 0.0025 *gm.* It follows from this, that each reading must be diminished by this value. The above table, therefore, must be corrected thus:

	Correction.		*Total Correction.*		*Interpolation.*
				1	+ 0.0018
0–2	2.0035	+ 0 0035	0–2	+ 0.0035	
				3	+ 0.0073
2–4	2.0075	+ 0.0075	2–4	+ 0.0110	
				5	+ 0.0138
4–6	2.0055	+ 0.0055	4–6	+ 0.0165	
				7	+ 0.0143
6–8	1.9955	− 0.0045	6–8	+ 0.0120	
				9	+ 0.0078
8–10	1.9915	− 0.0085	8–10	+ 0.0034	

Final Table of Correction.

From 0 to	1,	2,	3,	4,	5,	6,
Corr.:	+ 0.00,	+ 0.00,	+ 0.01,	+ 0.01,	+ 0.01,	+ 0.02,

7,	8,	9,	10.
+ 0.01,	+ 0.01,	+ 0.01,	± 0.0.

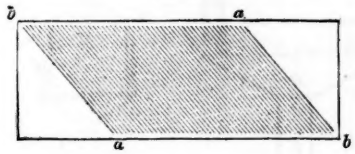
In order to facilitate the registering of the corrections, during the work, as much as possible, a strip of stiff white paper, of equal length with the burette, and marked with the same divisions, is laid on the table, and the correction required for each cubic centimeter written opposite the corresponding division. When the burette is in use, the strip of paper is hung up, in proper position, alongside of the burette, and each reading is recorded with inclusion of the corresponding correction.

The accuracy of the method may be still further increased by drawing out the end of the pipette to a fine calibre with point, whereby the remaining liquid, corresponding to the slowness of flow, is rendered small and uniform in quantity. On repeating the measurements upon the same burette, the new readings differ by about ± 0.01 *cc.*, which is the average error of reading. But the "total correction" is found to be the same, since the single errors of reading equalize each other.

On employing this method upon burettes purchased with the divisions marked, the marks of the latter are often so thick that great accuracy cannot be obtained. By graduating the tubes one-self, however, the marks may be made as fine as is desirable or requisite.

A suitable glass tube is drawn out, at one end, to the proper shape, and, after thorough cleaning, filled with water. Upon the place of the intended zero mark a strip of paper is pasted, and the water allowed to drain out to this exact point. Next, 25 *cc.* of the water are drawn off into an accurate measuring flask, graduated for this quantity, and after waiting a few minutes, the level of the liquid in the burette marked by a second strip of paper. The distance between the two edges of the paper is now to be divided into 250 equal parts—I presume that the burette should indicate, directly, $\frac{1}{10}$ *cc.* For this purpose I use a square of plate-glass, upon which are etched, with hydrofluoric acid, 251 parallel lines at least 20 *cm.* (4 inches) long and 1 millimeter apart (see further on). The space to be divided is measured with the points of compasses; one point of the latter is set in the first line of the

FIG. 2.



plate, and the other so revolved until it coincides with the last line. On now placing a rule along the two points, the places of intersection of the different lines with the edge of the rule are the required marks of division of the burette. To mark the latter, the rule is first fastened by by clamps, the burette (previously coated with wax) fixed stationary, in a suitable holder, so that it forms a continuation of the rule, and the division marks scratched in the wax by means of a pair of trammels or other form of compasses, moved along the edge of the rule, and the further point of which cuts the divisions. The corresponding figures having, next, been scratched in the wax, the burette is brushed over three or four times with concentrated hydrofluoric acid, by means of a pellet of cotton on the end of a wire. After one or two minutes the acid is washed off and the wax removed, when the marks will be found be sufficiently etched and only require to be blackened. The acid must be concentrated and should act only a short time, since it will, otherwise, eat under the surface of the glass. The fineness of the lines depends, of course, upon the fineness of the marking needle.

It is not at all necessary to be extremely scrupulous in the selection of suitable tubes. For, since perfectly cylindrical tubes cannot be obtained at all, it makes no difference whether the corrections—*which must anyhow* be made—are somewhat more or less. Besides, the corrections scarcely ever attain a magnitude of 0.2 *cc.* in tubes of average calibre.

A piece of plate-glass, etched with parallel equidistant lines, is of very general utility in a laboratory, since it permits a rapid division into a given number of parts, and often can replace a dividing machine. It gives more accurate results than the contrivance recommended by Bunsen, in which all the lines proceed from one point, since the rule does not intersect all the lines under the same angle.

In order to suffice, for all possible cases, from the single to the double distance, the lines upon the plate would have to be 1.73 times as long as the distance of the first line from the last.* Hence, if the lines are one millimeter apart, a plate containing 250 millimeters would have to be 1.73 × 250 millimeters or about 44 centimeters wide. But such dividing scales are scarce, since it is difficult to make perfectly straight lines of this length. Instead of this, the number of lines may be reduced to *one-half*, provided they are drawn inside of a parallelogram (see cut), the shorter diagonal, *aa*, of which is perpendicular to the shorter side, *ba*, and possesses half the length of the longer diagonal *bb*. This requires a plate 50 *cm.* long and 17 *cm.* wide, upon which the lines are drawn under an angle of 49° (rounded off) to the longer side, as shown in the illustration. The lines will then have a length of 22 *cm.*; the diagonal *aa* intersects them in intervals of exactly 1 millimeter, and the diagonal *bb* in intervals of 2 millimeters. Each intervening transverse line (parallel to the long side of the glass-plate) corresponds to the mean between these limits.

For most purposes a division into whole millimeters is large enough: still, to be prepared for all cases, the other side of the plate may be provided with lines only 0.5 millimeter apart.—*Journ. f. prakt. Chemie*, 1882, 452.

Fig. 1.

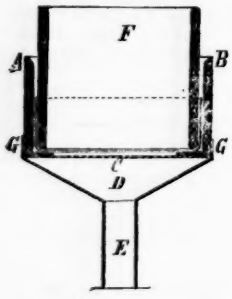
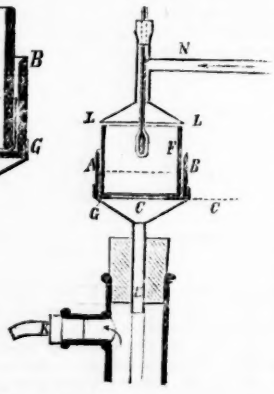


Fig. 2.



Filtering Apparatus.

THE accompanying cuts illustrate a new filtering apparatus devised by Denis Monier, of Paris (Germ. Pat. 16,285). It consists of a cylinder *A B* (Fig. 1), having a wire sieve *C* as bottom. This is placed upon the funnel *D E*, which is connected with the receptacle for the filtrate, by means of a rubber stopper, in the manner shown in Fig. 2. A piece of filtering paper having been laid upon the bottom *C*, the inner cylinder *F* is pushed down upon it so as to confine it to its place. The disc of paper should be large enough to extend some distance upward between the inner and outer cylinder, the proper height being indicated by the dotted line. After the liquid to be filtered has been poured into the inner cylinder, and the receptacle or flask has been connected with an aspirator, filtration proceeds rapidly, and the precipitate settles as a uniformly high layer upon the filter. It may subsequently be washed, and, if it is to be dried, the hood *L N* is placed on top of the cylinder. Hot air is conveyed through *N* upon the precipitate, the aspiration being still continued, and the proper temperature of the air is ascertained by the thermometer contained in the interior of the hood.

* Let D A represent the first line of division on the glass-plate described by the author, and A B the distance, measured perpendicularly to D A, between the first and last lines of division on the plate, and assuming the distance between A and B to be 1, then by setting one leg of the compasses opened to *double* this distance (or 2) in the point B, the end of the other leg will intersect the line D A at C. The distance from C to A results easily from the Pythagorean theorem: $CB^2 = CA^2 + AB^2$; or substituting and transposing: $CA^2 = 2^2 - 1^2$; hence $CA = \sqrt{3}$, or nearly 1.73.—ED. N. R.

The Analysis of Wine.*

BY J. NESSLER AND M. BARTH.

I. Determination of the Amount of Extract.

THE methods at present in use for the determination of the amount of extractive in wine differ from one another, not only in subordinate details, but also in principle, according as extract is understood to mean the constituents of the wine absolutely non-volatile without decomposition, or the wine deprived of its water, alcohol, and volatile acids. In the former case, it is especially necessary to volatilize the glycerin completely without partially decomposing the non-volatile constituents of the wine through submitting them to too high a temperature. Determinations of extract in this manner are usually made with only a small quantity of wine (5 or 10 *cc.*), which is heated upon a water-bath so long as water is perceptibly driven off, and the drying is then continued in an air-bath at 110° C., or preferably in vacuo until the weight remains constant. The other kind of determination has for a special object the retention of the glycerin as completely as possible in the extract. This can be effected either by avoiding raising the temperature above 100°, or by making an addition to the wine, which will prevent the volatilization of the glycerin at a temperature of from 110° to 115° C.

In estimating a wine-extract, the authors concentrate 50 *cc.* of the wine to a syrupy consistence on a water-bath, and then further dry it for three hours at the temperature of boiling water. In order to maintain this temperature exactly, they use a jacketed apparatus, arranged like a paraffin drying chest, the interspace being filled with boiling water, and made sufficiently large for the water to be maintained in vigorous ebullition during four hours without exhaustion.

In order to ascertain whether in this process access of air exercised an essential influence upon the weight of the extract, parallel experiments were made in which 25 *cc.* of wine were placed in each of two platinum boats, inclosed in test-tubes, and arranged so that, whilst side by side in the above-mentioned drying-chamber, a current of dried coal gas could be passed over one and a current of dried air over the other. A thermometer fixed in the drying-chest showed that, when the water was boiling vigorously, the temperature in the interior was 100° C. After heating for eight and ten hours, the residue was weighed with the following results:

	8 hours.	10 hours.
Current of coal gas	1.84%	1.80%.
Current of air	1.90%	1.86%.

The difference between the results of the two estimations is probably due to the extractive matter in the one case taking up oxygen from the air, but it is not considered sufficient to constitute an essentially larger quantitative result in drying under access of air than in a current of coal gas.

If the wine be first evaporated upon a water-bath in an open platinum dish to a syrupy consistence, it only requires to be heated for three hours in the drying-chest before reaching a point where the difference between two weighings is dependent entirely upon the volatility of the glycerin. Experiments made to determine the extent of this volatility showed that it amounted to about 10 per cent of glycerin present during the evaporation on the water-bath, and another 4 per cent in the drying-chest. So that a wine containing 1 per cent of glycerin would lose about 0.14 per cent through its volatilization during evaporation and drying; but, in a low wine, which with 5 or 6 per cent of alcohol would probably contain only 0.4 per cent of glycerin, the loss would only amount to 0.05 per cent. If, how-

* Abstract of a paper in *Fresenius' Zeitschr. f. Anal. Chemie*, 21, 43. Reprinted from *Pharm. Journ. and Trans.*, July 14th.

ever, the extract be dried at 110° C., experiment has shown that in this part of the operation alone, in three hours, about 10 per cent of the glycerin present is driven off, so that, at the end of the drying, the total loss is considerably larger than in drying at 100° C.

Alteration in the other constituents of the extract is relatively small when the drying is effected at 100° C. Fifty *cc.* of wine, containing 0.47 total acids, was evaporated to the consistence of a syrup, then heated further for half an hour upon a water-bath, after which the non-volatile acid amounted to 0.36 per cent. The extract of the same wine, after drying three hours at 100° C., showed, upon titration, 0.28 per cent; that dried at 110° C. showed 0.22 per cent, and that dried at 120° C., 0.11 per cent of non-volatile acid.

Grete has recommended that, in order to obviate the decomposition of the non-volatile constituents of the extract during drying, and especially to entirely prevent volatilization of glycerin, the wine should be evaporated with a measured quantity of titrated baryta water. Some experiments have been made by the authors to determine (1) whether an indifferent body like glycerin actually enters into chemical combination with caustic baryta so as to be no longer volatile at 110° C.; and (2) whether, if this be the case, the quantity of extract usually present in 10 *cc.* of wine is sufficient to combine chemically with the whole of the baryta in 10 to 15 *cc.* of baryta water of ordinary strength, so that in the dry residue no barium hydrate shall be present, since the reckoning of a variable amount of it as BaO would affect the result. An Alsace wine of 1876 was used, and it was found that the first of these questions must be answered in the affirmative, 0.489 per cent out of 0.5 per cent of added glycerin being recovered. As to the second, it was found that when 10 *cc.* of baryta water was used, it was certainly all combined, and that this was also the case with 15 *cc.*, unless the wine was particularly poor in extract. The partial decomposition of the nitrogenous organic constituents, which is made evident by the odor of trimethylamine when the extract containing baryta is heated, does not appear to exercise any essential influence upon the weight of the extract; whilst the acids of the wine, in the form of barium salts, better resist decomposition at a high temperature than in the free state.

This method has, however, the disadvantage that the same wine would be made to appear considerably richer in extract by the presence of traces of acetic acid, because, whilst this would have been produced from the alcohol, it would be weighed with the extract. But the purpose of the adulterator, who had added glycerin to make up for the want of extract in a wine which had been diluted before fermentation with alcohol and water or sugar and water, would be thus served, as the extract would be brought up to the normal quantity; whilst in external characters the extract containing baryta from a diluted wine that has been treated with glycerin does not differ from that of a natural wine. In practice, therefore, in many cases an estimation of the acetic acid and glycerin would also be necessary. As previously mentioned, by far the greater portion of the glycerin present in wine is retained in the extract. A wine, therefore, to which any considerable quantity of glycerin had been added would yield an extract that is soft and viscous even after three hours' drying; whilst the extract from a natural wine is hard, and generally bulky and blistered, or at the most—where the wine is strongly alcoholic through fermentation, which increases the normal quantity of glycerin—is plastic, somewhat like hard dough.

Hager has compiled a table* by the help of which the amount of extract in a wine can be ascertained from the specific gravity of the liquid, after being deprived of alcohol. In almost all the completely normal wines, the quantity of extract found by the above method corresponded within two to three-hundredths per cent to that indicated by Hager's table. If the wine contains sugar still unfermented, or unfermentable constituents of potato sugar, then usually the extract calculated is somewhat higher than what is found; but if, on the contrary, it contains an abnormal quantity of glycerin, the extract calculated is considerably less than what is actually found. Therefore, it is always advantageous to compare the amount of extract calculated according to Hager's tables with that found by the method described. This method does not do away with the necessity for an estimation of the glycerin itself in such wines as may be suspected to have received an addition of glycerin.

The authors have applied this method in the estimation of the extract of several hundred kinds of undoubtedly genuine wines of different years and from widely separated districts. The results of these determinations are set out in a tabular form in a separate communication.* It was found that the absolute quantity of extract in pure natural wines may vary within very wide limits. Among other conditions exercising an essential influence upon it are the nature of the soil of the district in which the wine is grown, the situation of the particular vineyard, the weather, degree of ripeness of the grapes, the course of the fermentation, and unskilful treatment of the wine, which may induce a considerable alteration in the composition of the extract without any foreign addition being made.

The amount of extract present in pure, completely fermented wines stands in definite relation to the acid present. It amounted in none of the genuine wines examined by the authors, after the deduction of the free acid of the wine, to less than 1 per cent. It may happen that a genuine wine may contain less than 1 per cent of extract free from acid; but in such cases the *non-volatile* acid is determined, and, after deducting this fixed acid from the total extract, there is always a residue amounting to at least 1.1 per cent. The estimation of the fixed acid is made with sufficient exactitude by evaporating 20 *cc.* of the wine to a syrupy consistence, heating it further for half an hour to an hour on the water-bath, subsequently treating it with hot water, and titrating after it has cooled.

But a larger proportion of extract than 1 per cent after deduction of total acids may be expected—

(1) In wines which contain much sugar still unfermented, but in which from any cause fermentation is stopped. The fully fermented dry wines usually still contain a small quantity of sugar, which may vary between 0.01 and 0.001 per cent. The minimum of extract free from acid to be expected in a natural wine would exceed 1 per cent by as much as the quantity of sugar as ascertained under suitable precautions by means of Fehling's solution exceeds 0.1 per cent.

(2) In wines from certain districts which are known by experience to produce in their best years a relatively full-bodied wine.

(3) In red wines. In these the smallest amount of acid-free extract is usually 1.2 per cent; but in "berry wines" and in such red wines as have stood only for a very short time over the husks and stalks, the minimum is exceptionally 1 per cent.

Wines rich in ash also stand higher in respect to amount of extract. If a wine yields much ash and gives relatively little extract, and if, in addition, the ash is easily fusible and not blackened by incineration, then the authors think there is reason to suspect that the wine consists partially of the product of fermentation of a solution of sugar over wine residues.

Provided that the total amount of extract, free from ash and sugar, does not sink below a certain quantity, it may vary very considerably in composition according to the quality of the wine. For instance, since glycerin is a by product of fermentation, and may amount to from 7 to 10 per cent of the weight of alcohol produced, a clear natural wine, rich in alcohol, would evidently contain more glycerin than one poor in alcohol. Another portion of wine extract consists of pectin bodies, which occur, however, in less quantity in proportion to the ripeness of the grapes used in making the wine. Very ripe grapes, rich in sugar,

* *Zeitschrift f. analyt. Chemie*, xvii., 502.

* *Zeitschrift f. analyt. Chemie*, xx., 891.

leave after fermentation relatively much glycerin and little pectin substance, while with unripe, very acid grapes, poor in sugar, the contrary is the case.

The ash constituents amount on the average to about 10 per cent of the entire weight of the extract, but this amount is not an indispensable characteristic of a pure wine, since it may be affected by various conditions. For instance, a wine may be rich in extract, but not in ash, when it contains a considerable quantity of unfermented sugar; or the ash may be low through separation of tartar, not only when a wine contains much alcohol, but when it has been exposed for a long time to a low temperature, which causes a separation of the tartar in crystals that do not redissolve on the normal temperature being restored. The total amount of ash found by the authors in genuine wines did not fall below 0.14 per cent.

(To be continued.)

Antiseptic Properties of Oxygenated Water.

At the Hospital St. Louis, M. Péan has been making experiments on the antiseptic properties of oxygenated water. This water was specially prepared, and contained from two to twelve times its volume of oxygen. Externally, the liquid was used in the dressing of large wounds and ulcerations of every kind, and having given good results, it was used as the only dressing after major operations, such as amputations of the arm, leg, and thigh, and in the ablation of large tumors. During the operation, a spray of the same liquid was playing on the wounds. Under the influence of these applications, the wounds showed a favorable tendency to unite by first intention, and in the case of chronic ulcers cicatrization was observed to be effected more rapidly than with any other dressing. At the same time, to patients who had been treated by other means, and who were threatened with septicæmia, the oxygen water was given internally with the most salutary results. M. Péan believes that this agent is superior to phenic acid, and it has also the advantage of being devoid of any obnoxious odor, nor does it possess any toxic properties.—*Medical Press.*

Poisonous Colors.

The German Government has just laid before the Reichstag the following decree, bearing date May 1st, 1882, concerning the prohibition of poisonous colors for the coloring of certain alimentary substances and articles of food. 1. The use of poisonous colors for the manufacture of food-products or articles of food intended for sale is prohibited. Those which contain the following materials or compositions are considered as poisonous colors within the meaning of this enactment: antimony (oxide of antimony), arsenic, barium (except sulphate of baryta), lead, chromium (except pure chromic oxide), cadmium, copper, mercury (excepting cinnabar), zinc, tin, gamboge, picric acid. 2. The preserving and packing of food-stuffs or food-products intended for sale in wrappers colored with the above-cited poisonous colors, or in barrels in which the poisonous color is so employed that the poisonous coloring matter can pass into the contents of the barrel, is prohibited. 3. The employment of the poisonous colors enumerated in Art. 1 is prohibited for the manufacture of playthings, with the exception of varnish and oil-paints made of zinc-white and chrome-yellow (chromate of lead). 4. The use of colors prepared with arsenic for the manufacture of paper-hangings, as well as that of pigments containing copper prepared with arsenic, and of matters containing similar colors for the manufacture of materials of dress, is prohibited. 5. The putting on sale, and the sale, wholesale or retail, of food-stuffs and food-products preserved or packed contrary to the regulations of Articles 1 and 2, as well as playthings, paper-hangings, and dress-materials manufactured in contravention of the directions in Articles 3 and 4, are prohibited. 6. This law will come into operation on April 1st, 1883.—*Br. Med. Journ.*

AMERICAN PHARMACEUTICAL ASSOCIATION.

In accordance with the programme published in our last issue, this Association met at the Cataract House, at Niagara Falls, on the 12th of September, and continued in session during that and the three following days.

The address of welcome by the Local Secretary, Mr. Hiram E. Griffith, was brief but cordial. The speaker referred particularly to the attractions of the place for the lovers of nature in all branches of science. Following this was the annual address by the President, Prof. P. W. Bedford, of New York, from which we make the following brief extracts:

"On the 15th day of October, 1851, there assembled at the rooms of the College of Pharmacy of the City of New York, in response to the request of the Board of Trustees of that college, nine druggists; three each from the cities of Boston, Philadelphia, and New York, and representing the Colleges of Pharmacy of those cities. Their object was to discuss matters relative to the importation of drugs and chemicals from abroad. Their discussions lasted through two sessions, and the members were so gratified with the results attained that they resolved to hold a future meeting and invite all pharmaceutical bodies to join with them. In accordance with this, a call was issued to a meeting in Philadelphia, Oct. 6th, 1852. The meeting was held in the Philadelphia College of Pharmacy, then in Zane street.

"Of the nine who met in New York in 1851, five still survive; three of them are yet identified with the drug business, and two of the three are still members of this Association.

"The meeting of 1852 was attended by eighteen delegates, and, by invitation, Profs. Wood, Bache, and Carson, and the professors of the Philadelphia College of Pharmacy were invited to participate, as also a druggist from Maryland, and one from Pennsylvania.

"Of the twenty-five who met thirty years ago, all but seven or eight have passed from this sphere of existence, and but one of that assemblage of thirty years ago is with us to-day, our honored and beloved member Charles A. Heinitsh, of Lancaster, Pa.

"During the first three years of this Association its discussions and business arose mostly from the reports of committees, and it was not until 1855 that any essays were read by individuals. In that year Mr. A. P. Sharp, of Baltimore, read a paper on 'Commercial Acids,' and E. S. Wayne, of Cincinnati, one on 'Grape Culture and its Products in Ohio.'

"In 1856, twelve excellent papers were presented, one each by R. Battey, of Rome, Ga.; E. Parrish, J. M. Maisch, and S. T. Garrigues, of Philadelphia; Prof. Aikens, of Baltimore; and seven by E. S. Wayne, of Cincinnati.

"At this meeting was first established the present plan of presenting queries at one annual meeting, to be reported upon at the next annual meeting; and among other important subjects was a report on 'Text-Books' by Prof. Procter. Committees were appointed to report on 'Progress of Pharmacy,' on 'Sale of Poisons,' on 'Syllabus of Study,' on 'The Participation of a Committee of that Body in the Work of Pharmacopœial Revision,' on 'Unofficial Formulæ.'

"At this meeting a modification of the constitution was adopted, which greatly increased the scope and usefulness of our Association. It was at this meeting that we first find the names of two new members, then young and promising, and successive years have only added to the record of faithfulness and earnestness of my friends John M. Maisch and Charles A. Tufts.

"In 1857, valuable reports were read on 'Weights and Measures,' 'Local Formulæ,' 'Sale of Poisons,' 'Progress of Pharmacy,' and several excellent papers were contributed.

"In 1858, the report of Prof. Procter on 'A Syllabus of

Study on Pharmacy' was one of the most admirable ever made to this Association. The paper of Israel J. Graham on 'Percolation,' at the same meeting, seemed a novel idea as compared to the olden time process used in exhausting drugs, but it was an important step in the right direction, and has made the modern process of percolation one of the distinguished features of American pharmacy. At this same meeting we first notice the name and presence of Dr. E. R. Squibb as a member, and right royally has he served this Association as an able and honored laborer in pharmaceutical knowledge.

"In 1859, our published proceedings show that our members contributed largely toward improving pharmaceutical processes, and later we find in the Committee of Revision of the U. S. Pharmacopœia, that out of nine on that committee our Association was represented by six of the number.

"The reports of Prof. Procter on 'Fluid Extracts' in 1859, and againn 1863, and the more recent papers of Dr. E. R. Squibb on 'Repercolation,' have made it possible for the pharmacist to produce, at a moderate expense, the peculiarly American products that even yet are scarcely appreciated abroad sufficiently to overcome the prejudices that exist to any modification of more ancient methods.

"The report of the Committee on Pharmacy Laws, made at the meeting of 1869, in Chicago, has been the basis of each and every pharmacy law since enacted, and there are to-day none in force which are in any way superior to the draft of law recommended by this Association.

"The reports on 'Progress of Pharmacy,' made first by Prof. Procter, and now an annual feature of our proceedings, were subsequently made by E. Parrish, elaborated in 1869 by Prof. Maisch, and since that time by Mayer, Scattergood, More, Enno Sander, Hoffmann, Mahla, Wenzell, Mercein; and for 1867 and 1868, again in 1873, and ever since by our worthy co-laborer Prof. C. L. Diehl. They have no superior of their kind."

After referring to a number of those whose individual labors have greatly advanced pharmaceutical knowledge and whose contributions have largely been made through the Association, he said:

"The growth of our Association may claim our attention for a moment. At the close of its first decade, 1862, it had 6 honorary members and 538 active members. In 1871, it had 23 honorary members and 920 active members. In 1881, it had 20 honorary members and 1,423 active members, while its mortuary list records the passing away of 14 honorary and 230 active members.

"Its largest accessions were in the years 1879–1881, the reports of the Executive Committee showing the election in those years of 86, 172, and 142 members.

"At the meeting of 1880, at Saratoga Springs, the Association adopted the amendment to the constitution providing for a council to whose consideration and action was confided much of the purely business matters which previously had come before the whole body for discussion and action."

He next referred to the good results following the inauguration, at the meeting held in Kansas City last year, of the plan of delegating to the Council the details of much of the routine business of the Association, and recommended that its Secretary should be allowed an honorarium. He also mentioned the services rendered by the Secretary, Treasurer, Reporter on the Progress of Pharmacy, Local Secretary, and Committee on Entertainment, and recommended that the latter be made a standing committee, with its headquarters in New York, that being the point from which railroad transportation could best be negotiated.

An addition to the roll of honorary members was recommended. An earlier period for holding the meetings was advised, and it was also advised that the officers elected annually should not assume their duties until the closing session of the annual meeting, a good reason for this being the greater familiarity of their predecessors with the business to come before the Association.

The address next referred to the failure of Congress to remove the "stamp tax," and the speaker urged a continuation of combined effort in that direction on the part of pharmaceutical associations. He also referred to the proceedings at the recent meeting of the British Pharmaceutical Congress; to the forthcoming Pharmacopœia, and in this connection said:

"This Association may congratulate itself on the fact that the report, made in response to its action at the meeting in Toronto in 1877, which report was presented at the meeting at Indianapolis in 1879, and subsequently published mainly by the liberality of members of this Association, has determined not only the method, but in a large degree, the compilers of this valuable work. None will dispute the noble self-sacrifice of its Chairman or withhold from him the praise that is justly his due. The publication of his report in 1879, and its distribution to the members of the Pharmacopœia Convention of 1880, enabled it to become the 'base of operations,' and it has well filled its duty. On the final Committee of Revision, out of the twenty-five members, appear the names of fifteen who are members of this Association. It is conceded by all who have examined its pages that the work is a great advance on its predecessor, and that it will take the first rank in the pharmacopœias of the world."

He spoke of the formation of State pharmaceutical associations, during the preceding year, in Massachusetts, Indiana, Virginia, Louisiana, and Nebraska, and to the presence of their delegates at this meeting. The influence likely to be exerted by such organizations, and their present membership of five thousand in securing a proper legal control of the practice of pharmacy was next mentioned, also their influence in increasing friendships and correct business methods among pharmacists. Respecting pharmaceutical legislation, he said:

"In many of the States where pharmaceutical associations have been formed, there now exist boards of pharmacy, organized under State laws, which have been aided by the action of the State associations. Unfortunately, a number of States, the associations have failed to secure in the passage of pharmacy laws.

"During the present and preceding years, such failures have occurred in Massachusetts, New York, Pennsylvania, Louisiana, Virginia, and possibly other States. So far as I have been able to procure statistics, pharmacy laws exist in the following States: Maine, New Hampshire, Connecticut, Rhode Island, New Jersey, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Iowa, Illinois, Wisconsin, Missouri, and Kentucky, and in the cities of New York, Brooklyn, Philadelphia, Baltimore, Washington, Cincinnati, St. Louis, and San Francisco.

"Pharmacy laws in the United States never can be made uniform. The feasibility of obtaining the favorable consideration of legislators to a fair, uniform, pharmacy law is one of possibilities of a later, if not a 'latter' day; but, at present, the literature of pharmacy laws is an entanglement of the mind in the mazes of legal enactments. . . .

"From a correspondence with all the Boards of Pharmacy mentioned, I am led to believe that each Board tries to faithfully execute the laws under which it is appointed. These laws vary, however, widely, in some cases permitting all in business to become registered; in others, requiring an examination of all persons who have not been in business on their own account for a term of years.

"Candidates are required to undergo an examination, usually before each member of the board to which he applies, and on a comparison of replies to my inquiries, I find that the lowest percentage at which any candidate can be passed successfully was sixty per cent., while in one or more Boards, they decline to pass any who fall below eighty per cent.

"From the replies received by me from the boards of pharmacy, it would appear that on the first examination about sixty per cent. of the candidates are successful, the remainder coming up one or more times until successful or refused further examinations.

"In some instances, copies of questions used by the boards of pharmacy have been submitted to me for my own

nformation on the subject, and it is fair to state that in every such case I have found them common sense, practical questions, calculated to bring out knowledge rather than surmise at what the answer should be.

"Under this incongruity of pharmaceutical legislation, it seems almost impossible for boards of pharmacy to take any concerted action, save an agreement to increase the care exercised in questioning and valuing the replies of applicants examined.

"To make the certificates of proficiency exchangeable in the several parts of the Union to which their possessors might direct their footsteps would seem to be not only impossible, but in some cases a positive error.

"There should be a difference between the standing of one who has passed under a lax law and one who has been subjected to a critical examination, and both these should be of less value than the college diploma, which is a guarantee that its possessor has given the time to carefully pursue a pharmaceutical course of study, and has gained his honor after an examination that is usually a very thorough one.

"The college graduate necessarily has the advantage in education and thoroughness. I would not be considered as disparaging boards of pharmacy or unduly extolling the colleges of pharmacy, but it seems a self-evident fact that the practical student with a college training is the man that will make the better mark in his life work."

He next spoke of the position the Association has occupied since its foundation, with reference to the subject of pharmaceutical education, and contrasted the educational establishments of Great Britain with those of the United States. In closing, he spoke of the influence that has been exerted in the past, and will be exerted in the future by the combined efforts of pharmaceutical colleges and associations, and finally spoke of the duties of employers towards their clerks.

A unanimous vote of thanks followed the completion of the address, and the following committee of ex-presidents was appointed to report upon the suggestions it contained: W. J. M. Gordon, G. F. H. Markoe, and Chas. Bullock.

The Committee on Credentials

reported seventy-seven applications for membership (afterwards increased to one hundred and eighteen).

The Report of the Committee on Legislation

was read by Prof. J. M. Maisch, Chairman

During the past year new laws regulating the practice of pharmacy were enacted in Georgia and Wisconsin, and amendments were made to existing laws in Connecticut, Iowa, and West Virginia. Laws to prevent adulteration of food and drugs were enacted in Louisiana and Massachusetts, and in the new license law of Connecticut a clause refers to the selling of liquors for medicinal purposes. No other new legislation has come to the knowledge of your Committee, but from correspondence they obtained considerable information about laws of earlier date that have not previously been noted by your Committee.

Alabama.—The code of 1876 requires the labelling of poisons, and forbids the sale to apprentices or children, except upon written orders from masters or legal guardians, and requires all druggists to obtain a license from some medical board of the State.

Connecticut.—The amended law applies to the whole State, and all druggists must be registered. Druggists can only sell spiritous liquors, in prescriptions, on the payment of a special license of $12 in cities or $10 in towns of less than 5,000.

Georgia.—The Board of Examiners are entitled to charge $15 for examination of candidates, and a registration fee of 50 cents to the auditor of the county. Exemption from new examination is made for physicians, druggists of nine years' standing, and graduates of colleges of pharmacy, or similar foreign institution.

Iowa.—The additional feature of the pharmacy law is an onerous increase in the expense attending the sales of liquors, by requiring a bond of $3,000. Many druggists now decline to sell any liquors even on prescriptions.

West Virginia.—The law was amended by requiring applicants for registration to give evidence of good moral character. The sales of poisons have been simplified. Provisions have been adopted to guard against abuses of liquor traffic, and the application of the law to incorporated cities and towns.

Wisconsin.—The new law seems to give great satisfaction, and the Board of Pharmacy find little opposition to the measures of the bill.

To the report was appended the full text of the laws enumerated above, as also laws in other States, but which possess less interest to the general reader. (An abstract.)

Report of the Committee on Drug Market.

The Chairman (Mr. L. Lehn, New York) in his introductory alluded to the sound and prosperous condition of business during the year.

The feeling in trade has been buoyant and confident, prices have, as a rule, shown an upward tendency, as compared to a year ago. From available data it would seem that the volume of trade for the year was the largest known as yet.

There has been a marked improvement during the past few years in the quality of drugs and chemicals; and importations from abroad are of a higher standard of goods, the first choice being usually the demand from our own land. This is largely due to the spread of knowledge from our colleges of pharmacy, and the more general spread of pharmaceutical literature, and is likely to continue until not only adulterations and admixtures shall not only have disappeared from the market, but only the best and purest grades be considered worthy of a place in a pharmacy.

Another feature noted is the diminished volume of speculation, and this is now restricted to but few articles.

Reference was made to the internal revenue tax, and the fact that foreign perfumery and similar articles will not need stamps. The drug trade will receive but little benefit, though the manufacturers of proprietary articles will be relieved to that extent. Hopes are entertained that the Tariff Commission, empowered by Congress, will devise such changes as will be more advantageous than would be likely to be obtained through the usual modes of legislation. This commission being composed to some extent of experts, its recommendations will undoubtedly have great weight in the deliberations of our legislators. Egyptian troubles have only affected the few commodities that are received from that country, and it is believed that it will not add to any further modifications of values of drugs. With excellent prospects for food products, a large immigration, and a good financial basis for business, there is every probability of continued prosperity.

The balance of the report was given to a detailed account of the market changes of the year; the leading drugs and chemicals being noted with admirable correctness.

A Nominating Committee was then appointed, also a committe to report on the exhibition, the latter consisting of Messrs. W. S. Thompson, Theo. Schumann, J. W. Caldwell, T. J. Casper, and Geo. Heger.

SECOND SESSION (Wednesday).

Following action on the minutes came the

Report of Nominating Committee.

President, CHAS. HEINITSH, Lancaster; *First Vice-President*, JNO. INGALLS, Macon, Ga.; *Second Vice-President*, LOUIS DOHME, Baltimore; *Third Vice-President*, WM. B. BLANDING, Providence; *Treasurer*, CHAS. A. TUFTS; *Permanent Secretary*, JNO. M. MAISCH, Philadelphia; *Reporter on Progress of Pharmacy*, C. L. DIEHL, Louisville.

Members of the Council.—S. A. D. SHEPPARD, Boston; WM. SAUNDERS, London; WM. S. THOMPSON, Washington, D. C.

Committee on Drug Market.—GEO. W. SLOAN, Indianapolis; JAS. G. STEELE, San Francisco; W. H. WICKHAM, New York, I. L. LYONS, New Orleans; J. P. MUTH, Baltimore.

Committee on Paper and Queries.—J. U. LLOYD, Cincinnati, Ohio; A. MAYELL, Cleveland; W. W. BARTLETT, Boston.

Committee on Prize Essays.—C. L. DIEHL, Louisville; JOHN F. JUDGE, Cincinnati; EMIL SCHEFFER, Louisville.

Committee on Legislation.—JOHN M. MAISCH, Philadelphia; S. A. D. SHEPPARD, Boston; CHAS. MOHR, Mobile.

An election was held confirming the choice of the Committee, and the President and Vice-presidents elect were introduced to the Association, the former taking the Chair.

A committee of five, consisting of Joseph Roberts, of Baltimore; Chas. Bullock, of Philadelphia; G. J. Liebig, of New York; Geo. W. Sloan, of Indianapolis; and P. C. Candidus, of Mobile, was appointed to report on the next place of meeting.

Following the report of the Treasurer, the following papers were read:

By J. L. LEMBERGER, of Lebanon, Pa., on "Oil of Thyme of Commerce is said to be very often deprived of its thymol. Is this statement true?" (See p. 294.)

By P. C. CANDIDUS, of Mobile: "It is desired to ascertain the solubility of the officinal chemicals in alcohol of the specific gravity 0.941 at 15.5° C. = 60° F. and at its boiling point. The method of examination should be stated."

By GEO. W. KENNEDY, of Pottsville, Pa.: "What is the strength of commercial mercurial ointment?" (See page 295.)

THIRD SESSION (Thursday).

Pending the completion of the minutes, Mr. J. M. FEEMSTER, of Cincinnati, read a paper under the following title: "What is the average amount of caffeine in the guarana of commerce as compared with that of the seed?" (See page 301.)

Following the approval of the minutes, then read, Mr. G. W. Kennedy, Secretary of the Council, read the minutes of that Committee, including the following names of

New Members.

Lemuel A. Ridgeway, Mansfield; Jno. McNiel, Scottdale; H. W. Westerman, St. Louis; J. H. Cool, Palmyra, N. Y.; Chas. J. Powers, Syracuse, N. Y.; T. F. Knock. Petersburg, N. Y.; Virgil Coblentz, Springfield, O.; Wm. S. Sweet, Pike, N. Y.; Francis Bishop, Holley, N. Y.; Chas. H. Price, Salem, Mass.; James Heemey, Stapleton, N. Y.; Geo. B. Kauffman, Columbus, O.; Louis M. Sherwood, Columbus, O.; Bernard J. Murray, Philadelphia; Chas. A. Siegmund, Boston, Mass.; Adolph Steirle, St. Paul, Minn.; Walter R. Francis, New Haven, Ct.; J. L. Melvin, Westhill, Ct; T. H. Cummings, Scottdale, Pa; Clarence H. Risk, Baltimore, Md; Colin H. Stam, Chestertown, Md.; Christian L. Keppler, New Orleans, La.; James S. Moore, West Stockbridge, Mass.; Oscar E. Thomas, Richmond, Va.; Robert S. Priddy, Windsor, Ont.; Edmund Knoebel, Highland, Ill.; Harvey N. Siegenthaler, Springfield, O.; Peter P. Hazen, Cornwall, N. Y; J. N. Hurtz, Indianapolis; Florian C. Schmidt, Evansville, Ind.; James F. Hageman, New Madison, O.; Winfield S. Lynn, Indianapolis; Woodville Browning, Hopkins, N. Y.; John Hurly, Little Falls, N. Y.; Albert J. Schoettlin, Louisville, Ky.; Jos. A. Mehringer, Jasper, Ind.; C. S. Porter, Eminence, Ky.; Wm. T. Springer, Louisville; T. J. Wrampelmeir, Ann Arbor, Mich.; George Slosson, Coffeyville, Kan.; E. H. Squibb, Brooklyn, N. Y.; Clarence A Potterfield, Charleston, West Va.; Henry F. Libby, Pittsfield; Isaac W. Turner, Jersey City; Arthur Rogers, Genesee, N. Y.; Chas. W. Rolph, Castile, N. Y.; Sam'l J. Bendiner, New York; Frank H. Slater, Matswan, N. J.; Chas. Truax, Cedar Rapids; Chas. H. Dalrymple, Norristown; Jos. W. Colcom, Lynn, Mass.; Jas. A. Owen, Rome, N. Y.; Willis Benedict, New Haven; Louis W. Sawer, Cincinnati, O.; Fred. Herbst, A. Adolph, Columbus, O.; R. Parsons, E. A. Schellentrager, F. W. Slosson, Dan'l Meyers, G. M. Schambs, H. F. Linden, Jas. Benedict, A. Smitheight, Jno. H. Asplin, Jas. Bunce, Geo. L. Nechler, Cleveland, O.; Jas. Richardson, St. Louis; Emmanuel Rommel, Suspension Bridge.

Honorary Members.

Thomas Greenish, London, Peter Squire, London, Joseph Ince, London, George F. Schacht, Clifton, Richard Reynolds, Leeds, England; Christian Brunnengraeber, Rostock, Carl Schacht, Berlin, Germany; F. Von Martenson, St. Petersburg, Russia; Nicholas Sinimberghi, Rome, Italy.

The Committee on the Next Meeting reported in favor of Washington, D. C., and the first Tuesday of September next (afterwards changed to the second Tuesday).

Mr. Chas. Becker, of Washington, was chosen Local Secretary.

Mr. S. A. D. Sheppard, of Boston, suggested the propriety of having a meeting in California, and, after some discussion, the Chair was authorized to appoint a committee to report at the next meeting upon the feasibility of the plan.

The Chair was also authorized to appoint a committee to attend the next meeting of the Western Wholesale Druggists Association at Cleveland.

Papers.

During the remainder of this session, the following papers were read and discussed:

By R. H. COWDREY, of Chicago, on "Active Diastase in Extracts of Malt."

By NATHAN ROSENWASSER, of Cincinnati, entitled, "Study of Percolation."

By Prof. EDGAR L. PATCH, of Boston, on "Separation of Gentio-Picrin."

By Prof. P. W. BEDFORD, of New York, on "How do the Commercial Bismuth Preparations Compare with the Requirements of the United States Pharmacopœia?" (See page 300).

By the same writer, on "The Creasote Occurring in the American Market." (See page 296.)

By CHARLES SPENCER, of Cleveland, on "Hydrastis Canadensis."

Prof. W. SAUNDERS, of London, Ont., gave his experience in the cultivation of several plants.

The Committee on the President's Address reported its approval of the suggestions contained therein, and they were adopted by the Association with slight modifications.

The Secretary of the Council (Mr. Geo. W. Kennedy) was voted an honorarium of one hundred dollars for his services.

The following committees were announced by the Chair:

On Entertainment—Geo. S. Seabury, of New York; T. J. Macmahon, of New York; W. H. Rogers, of Middletown; John A. Milburn, Washington; Robert Cowdrey, Chicago.

To Western Association—W. I. M. Gordon, Cincinnati; Chas. Bullock, Philadelphia; Wm. Saunders, London, Ont.; E. H. Sargent, Chicago; E. A. Shallentrager, Cleveland.

In the course of the session, Prof. Saunders introduced to the Association, amid great applause, Dr. W. B. Carpenter, of England, the well-known physiologist and microscopist. Owing to fatigue, Dr. Carpenter's address was brief. He acknowledged the cordiality of his reception, and spoke of the interest he had felt for many years in scientific education. For thirty-six years he had been a teacher, and, besides Mr. Powell, he is almost the only living man who was present at the birth of the achromatic microscope. His address was followed by another burst of applause, and soon afterward the speaker left the room, but not before a number of those present had been introduced to him.

THE FINAL SESSION

was called to order shortly after 9 o'clock on Friday morn-

ing. Following the approval of the minutes of the previous session, Mr. W. S. Thompson, of Washington, was added to the Committee on Entertainment.

Mr. Sheppard, the toast-master at the banquet of the previous evening, explained the failure to call upon all the gentlemen put down for speeches, by the fact that the room was required after midnight in order to prepare it for breakfast.

The Minutes of the Council were then read and the following organization announced for the ensuing year: *Chairman*, John Ingalls; *Vice-Chairman*, W. J. M. Gordon; *Secretary*, Geo. W. Kennedy. *Committee on Membership*, Geo. W. Kennedy, H. J. Menninger, John Ingalls, W. S. Thompson, J. M. Maisch, and Chas. A. Tufts; *Committee on Finance*, S. A. D. Sheppard, Jos. L. Lemberger, and H. J. Menninger. *Committee on Publication*, C. Lewis Diehl, Wm. Saunders, J. M. Maisch, and W. J. M. Gordon.

As a question of privilege, Prof. Remington protested against the treatment of those who were unable to participate in the banquet, and urged the necessity for some action that would prevent a repetition of a similar occurrence. He therefore moved that the Committee on Entertainment provide no more banquets. After some discussion, the motion was unanimously adopted.

A series of resolutions were read in behalf of the Pennsylvania Pharmaceutical Association, the substance of which was a protest against the practice of copyrighting common pharmaceutical names by registering them as trade-marks, and asking county medical associations to aid in checking this growing evil, by discouraging the prescription of such copyrighted articles. The resolutions were adopted.

A paper by Prof. Wm. T. Wenzell, of San Francisco, on "The Preparation of Phosphoric Acid," was then read by Prof. Remington, and after discussion was referred to the Committee on Publication. (See page 304.)

Mr. Chas. B. Allaire, of Peoria, Ill., read a paper responding to the query, "What percentage of the more important powdered drugs are of a reliable character and suitable for dispensing purposes?" The writer showed the alarming extent to which adulteration of the higher class of drugs is carried, and, on the other hand, that goods which are least in demand or low in price, are rarely adulterated. In the discussion which followed at some length, one speaker maintained that the condition of affairs in this respect is no worse than thirty or forty years ago. The author received a vote of thanks for the paper.

A volunteer paper by Edward Dana, of Portland, Me., was read by Prof. Saunders, on "Boracic Acid; its preparation and uses."

Mr. Adam Conrath, of Milwaukee, presented a paper, in answer to a query, on "The Alcoholic Strength of the Fluid Extracts of Commerce," Prof. Bedford being the reader. (See page 302.)

The last paper presented was by the Chairman of the Committee on Papers and Queries, Prof. J. U. Lloyd, on Precipitates in Fluid Extracts. The author suggested that the paper be read by title only, but on Prof. Remington insisting that it should be read, Prof. Lloyd read the paper in full. (See page 297.)

Resolutions offered by Prof. Remington were then adopted, thanking the Committee on Entertainment and approving the general plan of entertainment inaugurated at this meeting; also, thanking the reporters present for their very complete records of the several sessions.

Dr. Menninger offered the following and moved their adoption:

Resolved, That this Association deem it of importance to the efficiency of the National Military and Naval organization, as well as due to the national reputation, that none but well qualified persons, either graduates in pharmacy or licentiates in pharmacy, be employed as hospital stewards or apothecaries in the public service.

Resolved, That, in the opinion of this Association, such professional men should be raised to a rank commensurate to the qualifications requisite for such a service, and that for the purpose of obtaining efficient services, and in recognition of a learned profession, such officers should hold rank as commissional officers.

Resolved, That the Committee on Legislation be, and hereby is, instructed to forward copies of these resolutions to the Hon. Secretaries of the Army and of the Navy, to the Surgeons-General of the Army and Navy, and to the Chairman of the Army and Navy Committees of the United States Senate and House of Representatives.

After considerable discussion the resolutions were adopted.

Prof. Bedford then made brief remarks upon the death in New York, on the 13th inst., of General Henry T. Kiersted, one of the ex-presidents of the Association, (1860-61).

Mr. Geo. J. Seabury, Chairman of the Committee on Entertainment, in behalf of his colleagues, requested a reconsideration of the motion to instruct the committee to provide no more banquets. He did this in order that the subject of feasibility of banquets might be brought before the meeting for discussion.

The motion was reconsidered.

In explaining his reason for asking a reconsideration, Mr. Seabury stated that the inability of the managers of the hotel to perform their contract with the Association, was no reason why there should hereafter be no banquet. The committee, in making a contract, could not foresee the fact that the contractors would fail to live up to it. While there were often mistakes in the first mixing of a compound it usually followed that experience would enable such beautiful prescriptions to be written that everything would come out complete. The present meeting was the inauguration of a new plan of providing for the entertainment to continue during the session, and the committee had done its best to make it successful. In regard to the mistakes and rough places, it might be well to remember "Josh Billings'" ingenuous remark, "The first time it is not your fault, the second it is." The committee would be able to profit by the present meeting.

Prof. Markoe followed with somewhat humorous remarks, and suggested some form of amusement other than a banquet. He referred to the fact that the American Society for the Advancement of Science is so bulky that it meets in sections, some nine in number. In addition to these it has one of an unofficial sort, known as "Section Q." This is to interest the wits, and the ladies are invited to join in making fun of the sober work of the association, while any kind of humorous matter is in order.

Prof. Remington suggested that no one could better organize a "Section Q" than Chairman Seabury.

Mr. Seabury expressed his thanks for the compliment and remarked that, as a matter of fact, the nature of the entertainment to be provided was discretionary with the committee.

On motion of Prof. Saunders, the matter was adjusted by leaving it to the discretion of the committee.

On motion of Prof. Remington, the time for holding the next annual meeting was reconsidered, and he moved to change the date to the *second* Tuesday in September. This action was finally approved by a vote of twenty-four to seventeen.

The Committee on Exhibition not being present, was directed to report to the Council.

On motion of Prof. Markoe, the thanks of the Association were tendered to the outgoing officers for the acceptable manner in which they had performed their duties.

The meeting was then adjourned.

Amyl Nitrite as a Remedy for Ague.

DR. SAUNDERS, of Indore, India, gives nitrite of amyl mixed with an equal amount of oil of coriander, to render it less volatile and mask its taste. Four drops of this are put on a piece of lint, and from it is freely inhaled by a patient in the cold stage. Following the flushing of the face which occurs, perspiration takes place, and the cold stage is at an end.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

No. 1084.—**Blood-Orange Syrup** (L. E. C.).

TAKE a convenient number of ripe and sound blood oranges (so-called Chinese, or Mandarine, or Maltese oranges); grate off the outer yellow peel and mix this intimately with a portion of the sugar directed subsequently to be used for making the syrup. Then cut up the oranges, remove the seeds, and express the juice in a linen bag. To each quart of juice add one pint of water and six pounds of sugar. Dissolve with the aid of a *very* gentle heat, in a well-covered vessel, and strain.

We have been told that this syrup is sometimes replaced by syrup made of common oranges, and tinted by tincture of krameria, so as to justify the qualification "blood" orange syrup.

No. 1085.—**Fungoid Growth in Aromatic Waters** (C. L. B.).

The nature of fungous growth in stagnant liquids is well expressed by the term "fungous" itself. Almost the whole of the substance which we observe forming is of vegetable origin, and belongs to the lowest classes of fungi, particularly the family of *Bacteria*, of which the most important representatives are Bacterium, Vibrio, Spirillum, Spirochæte, and Sarcina. Representatives of other families, particularly of the Saprolegniaceæ, are also present. (Our space does not permit a detailed description, for which we must refer you to other sources, for instance, Cooke: An Introduction to the study of Microscopic Fungi. London, 1865.)

These fungi are introduced into the water or other liquid, either by actual transfer from the source of original growth or by their being carried by the atmosphere. Certain substances, present in the liquid, can partly or entirely prevent their development; such substances are alcohol, carbolic or salicylic acids, metallic salts, common salt. Essential oils likewise have this power to some degree, but less so in very dilute solutions. Again, the presence of other substances promotes their development, as, for instance, vegetable extracts, animal constituents, etc.

No. 1086.—**Determination of Alum in Bread** (Dr. W.).

We take the following from *Allen's Commercial Organic Analysis*, Vol. II., 399, which work should be on the shelves of your library:

Of the constituents of alum, the only one which is of service for its determination in bread is the aluminium. Pure wheat grain appears to be wholly destitute of aluminium compounds, but commercial wheat flour, to which no alum has been added, is apt to contain small, but sensible traces of aluminium derived from extraneous mineral matter. Such aluminium is present as silicate, and gives no blue color with the logwood test. On the other hand, all the ordinary methods of quantitatively estimating the alum are incapable of distinguishing between the aluminium present as silicate and that existing in a soluble form. Hence, it is usual to make a correction for the aluminium present as silicate. This is difficult to do with any approach to accuracy, but it may be taken as a rule that from the amount of alum calculated from the total aluminium in the bread should be subtracted a weight equal to the silica found, when the difference will be approximately the true amount of alum added.

The following method should be employed for the determination of the total alumina and silica in bread.—100 grams' weight of the sample is dried at 100° C., and then incinerated. This is best done by heating it in a platinum tray (about five inches by three) in a gas-muffle, but may also be effected in a platinum dish or large crucible placed over a Bunsen's burner. The heat should be moderate, so as to avoid fusion of the ash. The process is completed by adding pure sodium carbonate and a little nitre, and heating the mixture to fusion. The product is rinsed out with water into a beaker, acidulated with hydrochloric acid, and evaporated to dryness. The residue is taken up with dilute acid, and the liquid filtered from the silica, which is washed, dried, and weighed. To the solution dilute ammonia is added, till the precipitate barely redissolves on stirring, when a slightly acid solution of ammonium acetate is added, and the whole allowed to stand in the cold for twelve hours. The liquid is then filtered, the precipitate washed, and dissolved in the smallest quantity of hydrochloric acid. The solution so obtained is poured into an excess of an aqueous solution of *pure* caustic soda contained in a large platinum crucible. After heating for some time, the liquid is considerably diluted and filtered. The filtrate is acidulated with hydrochloric acid, a few drops of sodium phosphate added, and then a slight excess of ammonia. The liquid is kept hot till all smell of ammonia is lost, when it is filtered, and the precipitated aluminium phosphate washed, ignited, and weighed. Its weight, multiplied by 3.686, gives the ammonium alum, or by 3.873, the potassium alum in the 100 grams of bread taken. The amount so found requires a correction equal to the percentage of silica obtained. By multiplying the percentage of alum by 280, the number of grains of alum per four-pound loaf will be obtained. The number of milligrams of $AlPO_4$ per 100 grams of the bread gives, without calculation, a close approximation to the number of grains of ammonium alum per four-pound loaf.

Throughout the foregoing process the use of porcelain vessels should be wholly avoided, and care should be taken that the alkaline liquids are not heated in glass. The caustic soda employed should be scrupulously free from alumina.

No. 1087.—**Prescription Query** (S. & F.).

Our correspondents send us the following two prescriptions with the accompanying queries:

I. Tr. ferri chloridi..... ʒ i.
Acid. phosphor. dil..... ʒ iss.
Aquæ.....q. s. ad ʒ i. M.

II. Acid. tannic.....grs. v.
Tr. ferri chloridi..... ʒ ss.
Acid. phosphor. dil ..... ʒ ij.
Aquæ.....q. s. ad ʒ i. M.

"In prescription I., we find that the phosphoric acid decolorizes the iron. Does it change the chemical properties or affect the therapeutic action of the iron?"

"In No. II., the phosphoric acid clears up the inky solution or tannate of iron which is formed, while the composition is considered incompatible. How is the change effected, and what are the changes which take place? Does the reaction effected by the acid change the therapeutic action of the prescription?"

Concerning the chemical changes, we can only say that, in analogy with the general law, according to which, in a mixture of several definite acids and bases, the least soluble compounds capable to be formed are produced, the probable reaction is this, that the phosphoric acid combines with the iron to ferric phosphate, which is kept in solution by the hydrochloric acid set free (not taking into account,

at present, whether there was an excess of phosphoric acid or not). The same effect which is produced by the phosphoric acid is also produced by some other strong acids. If the preceding theory is correct, which we have no reason to doubt, then your mixture will contain the ferric phosphate (phosphate of sesquioxide of iron) in solution. We do not think there is much therapeutic difference between the ferric chloride and the ferric phosphate when the latter is in solution.

In the second prescription, the tannic acid complicates matters a little. As is well known, tannic acid produces a permanent precipitate only with ferric salts (salts of sesquioxide of iron); but this blue-black precipitate is dissolved by free acids; and in a solution of ferric salts containing free acids, the precipitate does not appear. Of mineral acids, a very small quantity is sufficient to destroy or prevent the precipitate; the same is the case with some organic acids; of others, a larger quantity is required, and particularly so in the case of acetic acid, for which reason this is preferred for making ink. We do not think the therapeutic properties of the mixture materially altered.

No. 1088.—**Solution of Strychnine** (A S. M.).

This correspondent wants directions to make a "permanent" solution of strychnine, one grain in one drachm. The matter is simple enough. Take the quantity of strychnine desired for solution, say eight grains, triturate it, in a mortar, with about four fluid drachms of warm water, and add acetic acid, in drops, until the strychnine is completely dissolved, and the liquid has a slightly acid reaction. Then add three fluid drachms of glycerin and enough water to make one fluid ounce. When the mixture is cold, examine its bulk; if it has shrunk in volume, enough water must be added to bring it to one ounce. Instead of glycerin, alcohol may be used.

No. 1089.—**Carbonate of Ammonium in Baking Powder** (O. A. A.).

The judicious use of carbonate of ammonium, in baking powder, or by itself, as an aid to cause bread to rise and to be porous, is by no means to be condemned. There is no fixed rule or proportion for carbonate of ammonium in a cream of tartar and bicarbonate of sodium baking powder. You will have to ascertain the best proportion by actual trial. The carbonate of ammonium is decomposed during the baking, the carbonic acid gas and most of the ammonia escape, and help, thereby, in rendering the bread porous and light.

No. 1090.—**Indelible Ink** (McK. and H.).

A good black, indelible ink may be made in several ways.

If the ink is to be used for writing or drawing, and there is no danger of the letters, etc., being rubbed off, mechanically, *printing ink* or *India ink* may be used.

Printing ink sinks into woven fabrics to a considerable depth, and will last a long time. It is probably one of the cheapest marking inks to be used with stencils.

In many cases, India ink answers as well, and in some cases, as for engrossing valuable documents, it is the only safe ink, since nothing but the destruction of the document itself will be able to obliterate it. It is made by triturating one hundred grains of best India ink (Chinese) with very dilute hydrochloric acid (about twenty-two parts of absolute hydrochloric acid in one thousand parts), or with a solution of acetate of manganese in diluted acetic acid.

Another fine indelible ink which resists all ordinary reagents is made by means of vanadium. Vanadium and its salt are rather expensive still, although their price has fallen during the last few years to about one-tenth of what it was formerly. A kilogram (two pounds) of vanadate of ammonium, bought at the works, is now worth about ninety dollars.

An indelible aniline ink may be made thus: One hundred grains of hydrochlorate of aniline and sixty grains of chlorate of sodium are dissolved in three and a half ounces of water, and one-half grain of vanadate of ammonium added to the liquid, when it will soon become dark-colored, and deposit an abundant precipitate of aniline black. This may be dried, made into a paste with powdered acacia, water, and glycerin, and used with a stencil.

Or one part of pyrogallic acid is triturated with three parts of powdered acacia, three parts of vanadate of ammonium, and a sufficient quantity of cold distilled water, in a porcelain capsule, until a uniform mixture is made. This forms a fine ink, flowing black from the pen. This may also be made into a stencil ink by using less water and adding a little glycerin.

No. 1091.—**Wine of Pepsin** (A. J. W.).

The formula of the new German Pharmacopœia is as follows:

Pepsin*	50 parts.
Glycerin	50 "
Water	50 "
Hydrochloric acid	5 "
White wine	1,845 "

Rub the pepsin with the glycerin and water to a thin paste; add to it the white wine and hydrochloric acid; set the mixture aside for six days, repeatedly stirring, and filter. The product is a clear, yellowish liquid.

No. 1092.—**Epilepsy Cure** (W. R. C.).

We know nothing about the "celebrated Dr. A. L. Turner," nor about his "remedy." The only thing we can say is this, that the sheet of printed testimonials which you have sent us is absolutely valueless in our eyes, and would induce us, *ipso facto*, to dissuade any one from having anything to do with the author.

Diamond Ink for Glassware.

Editor of New Remedies:

In answer to query 1,081, I inclose the agent's card. I bought some of the ink several months ago, but cannot recommend it. It works well enough while fresh, but soon dries up, or hardens in the bottle, and becomes entirely worthless. At least, this is my experience. I have about ten bottles on hand in that condition. F. C. B.

NOTE BY ED. N. R.—It occurs to us that the ink may really be good, and the trouble lie merely in its readiness to dry up. If the ink were transferred to small vials, containing only as much as may be likely to be used on one occasion, or if some other method be adopted to prevent evaporation completely, the objectionable feature would probably be removed.

Formulæ Wanted.—Correspondents ask for the composition of the following proprietary preparations: 1. Warner's Safe Liver and Kidney Cure. 2. Blair's Gout and Rheumatic Pills. 3. Gardiner's Rheumatic and Neuralgic Compound. 4. Lydia Pinkham's Compound.

St. Jacob's Oil.—One of our correspondents writes: The formula given in your August number, under query 1,071, omits ether, which is plainly distinguishable in the mixture referred to.

The Medical Chronicle is the name of a new monthly edited by George H. Rohé, M.D., and published in Baltimore. 24 pp. 8vo, $1.00 per year.

The Druggist's Journal, a montly edited by L. E. Sayre, Ph.G., and published in Philadelphia, is the latest addition to pharmaceutical literature. The first number, issued in August, consists largely of articles of a popular nature or such as are of general interest to the drug trade, It is sixteen pages, 4to, and costs $1.50 per year.

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* From the description of "Pepsinum" it would appear that the commercial *diluted* pepsin, containing sugar of milk or dextrin, is intended. The Pharmacopœia does not say this expressly. Here is the definition:

Pepsinum (Pepsin). A fine, almost white powder, not hygroscopic, almost odorless and tasteless, and yielding a turbid solution with water. Upon the addition of 2 drops of hydrochloric acid, the solution becomes clearer: 0.1 *gm.* of pepsin, dissolved in 150 *gm.* of water and 2.5 *gm.* of hydrochloric acid, should dissolve 10 *gm.* of boiled egg-albumen, cut into pieces of the size of lentils, if repeatedly and briskly shaken with it within four or six hours at 40° C., to a faintly opalescent liquid.

BIBLIOGRAPHY.

HANDWŒRTERBUCH DER PHARMAKOGNOSIE DES PFLANZENREICHES. Von DR. G. C. WITTSTEIN. 8vo. Breslau, 1882. (Eduard Trewendt.) (Alphabetical Handbook of the Pharmacognosy of the Vegetable Kingdom.)

IN noticing the second part of this work by Prof. Wittstein (see notice of first part on p. 154 of our May number), we do not hesitate to say that the work will fill a long-felt want in literature, inasmuch as it not only embraces within its scope the vegetable drugs now officinal in modern pharmacopœias, but also many others which have become obsolete or are only used in domestic practice. It is constructed on a plan more or less different from other similar works of recent date, and aims to present the more important and salient features of each subject, rather than to enumerate every detail. The only point in which we cannot always agree with Dr. Wittstein are the etymological derivations. The similarity of sound or apparent congruity of root-letters is not sufficient to convince us of the correctness of any derivation. We require, in addition, corroborative testimony from cognate languages, dialects, or other sources which put the derivation on a historical basis. To mention only *one* example: *Hordeum* (barley) is not derived from *hordus* ("heavy"), as our author says, who adds, "because the bread prepared from it is very heavy." In the first place, *hordus*, or, rather, *fordus*, means "pregnant," "bearing young," and belongs to *fer*-o, "I bear" (root: bhar). *Hordeum* is identical with Greek: κρι-θή; German: Gerste; and, although the form *fordeum* occurs in Terentius Scaurus (*De orthographia*, ed. Putsche: pp. 2,250, 2,252, 2,258), yet it has nothing to do with *fer*-o; it cannot be traced back with certainty, but probably belongs to the root *gharsh*, "to contuse," from which *gharsh-dha* could be legitimately formed, although this word does not actually exist in Sanskrit or its immediate derivatives.

The present number brings the work down to "Gundelrebe," Herba Hederæ terrestris.

PHARMAKOGNOSIE DES PFLANZENREICHES. Von F. A. FLUECKIGER. Zweite Auflage. Zweite Lieferung. 8vo. Berlin (R. Gaertner's Verlag). 1882. (Pharmacognosy of the Vegetable Kingdom. By F. A. Flückiger. Second Edition. Second Part.) Pages 291–589. With Index.

WE have noticed the first part of this important work in our June number of last year. The present issue contains the Rhizomes and Roots, Stems, Barks, and Bulbs. Each subject is treated in the most detailed manner, and the results of all recent investigations are everywhere taken account of. One of the most valuable features of the book are the numerous references to the literary sources from which the author has drawn his information, and it would be difficult to find another author who has searched through such a vast number of works—in all departments of literature, to collect facts bearing on each subject. There will be but few gleanings left for any successor. The contents of the present part are arranged as follows:

SECOND PART: Phanerogams.

First Series: Organs, entirely or partly subterraneous.

I. Rhizomes and Roots of the Monocotyledonous Plants.

A. Non-Aromatic: Radix Sarsaparillæ; Tuber Chinæ; Rhizoma Veratri; Rhiz. Iridis; Rhiz. Graminis; Tuber Salep (Bulbus Scillæ, see Second Series, III.).

B. Aromatic: Rhizoma Calami; Rhiz. Zingiberis; Rhiz. Galangæ: Rhiz. Curcumæ; Rhiz. Zedoariæ.

II. Rhizomes and Roots of the Dicotyledonous Plants.

A. Roots and Stolons of Mucilaginous or Sweet Taste: Radix Althææ; Rad. Liquiritiæ; Rad. Ononidis.

B. Astringent Roots: Radix Ratanhiæ.

C. Bitterish or Bitter Rhizomes, Roots or Tubers: a, not containing special sap-vessels: Rhizoma Rhei; Radix Calumbæ; Rad. Gentianæ; Rad. Ipecacuanhæ; *b*, containing special sap-vessels and lactiferous ducts: Tuber Jalapæ; Radix Orizabæ; Rad. Turpethi; Rad. Scammoniæ; Rad. Taraxaci; Rad. Senegæ.

E. Aromatic Roots and Rhizomes: 1. containing starch: Rad. Sassafras; Rad. Angelicæ; Rad. Levistici; Rad. Pimpinellæ; Rhiz. Valerianæ; 2. not containing starch: Rhiz. Arnicæ; Rad. Pyrethri; Rhiz. Enulæ.

F. Tubers of Sharp, Burning Taste: Tuber Aconiti.

Second Series: Aërial Organs.

I. Stems.

Lignum Guaiaci; L. Quassiæ; L. Sandali; Stipites Dulcamaræ.

II. Barks and Parts of Barks.

A. Astringent Barks: Cortex Quercus; C. Ulmi; C. Granati.

B. Bitter and Bitterish Barks: Cortex Frangulæ; C. Chinæ; C. Condurango.

C. Aromatic Barks: C. Cinnamomi chinensis; C. Cinnamomi zeylanicus; C. Cascarillæ.

D. Cork: Suber Quercinum.

II. *Leaf Organs.*

A. Bulb-Scales: Bulbus Scillæ.

The third, and concluding part of the work, is promised to be pushed to completion as rapidly as possible.

CHEMISCH-TECHNISCHES REPERTORIUM. Uebersichtlich geordnete Mittheilungen der neuesten Erfindungen, Fortschritte und Verbesserungen auf d. Gebiete der technischen und industriellen Chemie, mit Hinweis auf Maschinen, Apparate und Literatur. Von DR. EMIL JACOBSEN. 1881: Erstes Halbjahr; Zweite Hälfte. (Chemical and Technical Repertory. Systematically Arranged Notices of the Latest Inventions, Advancements, and Improvements Upon the Field of Technical and Industrial Chemistry, with Reference to Machines, Apparatus, and Literature. By Dr. E. Jacobsen. 1881. First Semester: Second Part.) Four parts a year. 8vo. Berlin (R. Gaertner's Verlag).

WE take pleasure to draw special attention to this work, for the purpose of bringing it to the notice of those who desire to obtain a concise and well-digested review of all the latest improvements in technical and industrial chemistry. The Repertorium appears already since 1862, and a complete set is an exceedingly valuable work of reference. To give an idea of its scope, we give a list of the sections contained in the *two first* numbers of 1881: Building materials, cements, artificial stone. Dyestuffs, dyeing, and printing. Fats, oil, illuminating and heating materials. Fermented beverages. Tanning, leather and glue. Textures. Glass and clay. Wood. Caoutchouc. Cement, adhesive materials, artificial masses. Lacs, varnishes, and paints. Metals. Articles of food and consumption. Paper. Photography. Waste products, manure, disinfection, hygiene of trades. Soap. Copying processes. Explosives, etc. Preparation and purification of chemicals. Chemical analysis: (a) special and general methods, (b) reagents and apparatus. List of utensils, machines, apparatus, etc. Secret remedies, adulterations, etc. Literature.

ACONITIC ACID IN THE SCALE FROM SORGHUM SUGAR PANS. By HENRY B. PARSONS. (Reprint from *The Amer. Chem. Journ.*)

COMPTE-RENDU DES TRAVAUX DE LA SOCIÉTÉ DE PHARMACIE DE LORRAINE. 8vo. Nancy, 1882.

S. MAW SON & THOMPSON'S QUARTERLY PRICE-CURRENT. 4to. London, 1882.

BOOK OF ILLUSTRATIONS to the above. 4to. London, 1882.

THE book of illustrations is truly an invaluable work for reference. It has been gotten up with superior taste, the cuts are excellent, paper and binding leave nothing to be desired and the illustrations cover the entire stock of trade of wholesale dealers in surgical instruments, druggists' sundries and pharmaceutical apparatus.

TRANSACTIONS OF THE MICHIGAN STATE MEDICAL SOCIETY, for the year 1882. Pp. 284, 8vo.

THIS report, received from the Secretary, Geo. E. Ramsey

M. D., of Lansing, contains the usual account of proceedings and thirteen addresses and papers upon important topics. Of its two hundred and forty-eight members a large proportion attended the meeting, and the business transacted shows that the time of the society is devoted to active works.

KILNER'S MODERN PHARMACY AND DRUGGIST'S FORMULARY, Vol. i., No. iv. Springfield, Ill., 1882. O. C. St. Clair & Co. Pp. 48. 8vo.

THIS completes the four supplements promised with the original volume. They will be continued, in future, for those who subscribe $1.00 yearly, and will, like the preceding ones, be issued quarterly. They will be found of practical value to all retail pharmacists.

EIGHTEENTH ANNUAL REPORT of the Alumni Association for the year 1881–2, with the Exercises of the Sixty-first Annual Commencement of the Philadelphia College of Pharmacy. Pp. 141. 8vo.

THIS pamphlet will be of especial interest to all graduates of the Philadelphia College and can be had for the small sum of fifteen cents, on application to the Secretary, William E. Kreusen, Northeast corner Eighth and Montgomery ave., Philadelphia.

PROCEEDINGS OF THE PRELIMINARY AND FIRST ANNUAL MEETING OF THE VIRGINIA STATE PHARMACEUTICAL ASSOCIATION, 1882.

THE MULTUM IN PARVO REFERENCE AND DOSE BOOK. By C. HENRI LEONARD, M.A., M.D. Detroit: The Illustrated Medical Journal Co., 1882. 12mo. Pp. 100. Paper, 30 cents; cloth, 75 cents.

THIS little work contains the formulas of a number of recently proposed compounds; the doses of a large number of new remedies and preparations; an extensive dose-list; the proportions of active agents in a number of preparations; remarks on certain pharmaceutical preparations; rules for pronunciation and genitive case-endings; incompatibles; poisons and their antidotes; chemical tests; urinary tests; obstetric memoranda; visceral measurements; the pronunciation of proper names of well-known medical authors; the New Jersey fee-table; tables of abbreviations, and numerous other items of professional interest. It is altogether a marvel of condensation.

AMERICAN MEDICINAL PLANTS. An Illustrative and Descriptive Guide to the American Plants used as Homœopathic Remedies: Their History, Preparation, Chemistry, and Physiological Effects. By CHARLES F. MILLSPAUGH, M.D. Boericke & Tafel, 145 Grand Street, New York, 1,011 Arch Street, Philadelphia, 1882. $1.00 per part.

THE first fasciculus of this important work contains chromolithographic illustrations and text relating to *Sanguinaria canadensis* Lin., *Inula Helenium* Lin., *Apocynum androsæmifolium* Lin., *Asclepias Cornuti* Decand., *Symplocarpus fœtidus* Salisb., and *Iris versicolor* Lin. The work will contain altogether one hundred and eighty illustrations and corresponding text, in about thirty numbers, to be sold by subscription. It is an elegant piece of workmanship.

THE MEDICAL REGISTER AND DIRECTORY OF THE PRACTITIONERS OF MEDICINE IN THE CITY AND COUNTY OF PHILADELPHIA. Compiled from the Official Register in the Office of the Prothonotary of the Court of Common Pleas of the City and County of Philadelphia. By SAMUEL B. HOPPIN, M.D. Philadelphia: P. Blakiston & Co., 1882. Pp. 72, 8vo, $1.00. For sale by J. H. Vail & Co., New York.

PENNSYLVANIA has adopted a system of registration similar to that in force in New York State. The work here referred to has been compiled from the records of one county, and the office-hours added. Separate classification has been adopted for graduates of sectarian schools, and for those who, having no diploma, have been in practice ten years, and are registered under a special provision of the act.

NEW PATENTS.

[Complete specifications and illustrations may be obtained of any one or more of the following patents by sending the number, title, name of patentee, with twenty-five cents for each copy, to the Commissioner of Patents, at Washington, D. C., together with the name and address of the person requesting the same.]

257,472. *Draft-Tube for Soda Water and other Beverages.*—William P. Clark, Medford, Mass.

257,615. *Lozenge Machine.*—Thomas Robertson, Toronto, Ontario, Canada.

257,723. *Paper Board for Dressing Wounds.*—Paul Koch, Neuffen, Würtemberg, Germany.

257,825. *Siphon.*—Francis W. Maxstadt, Albany, N. Y., assignor of one-half to Bernard Nusbaum, same place.

257,828. *Tartrate of Oxychinoline.*—William Pickhardt, New York, and Herman Endemann, Brooklyn, N. Y.

257,829. *Hydrochlorate of Oxychinoline.*—To the same.

10,108 and 10,109 (Reissue). *Grinding and Sieving Caustic Alkali.*—William J. Menzies, St. Helens, County of Lancaster, England, assignor of one-half to George T. Lewis, Philadelphia, Pa.

257,866. *Process of and Apparatus for Administering Anæsthetics.*—Samuel J. Hayes, Pittsburgh, Pa.

257,982. *Nippers for Opening Bottles.*—J. Albert Schmidt, New York, N. Y.

258,001. *Preserving Compound.*—Frederick S. Barff, Kilburn, County of Middlesex, England. Boracic acid and glycerin.

258,029. *Apparatus for the Manufacture of Alcohol.*—August Deininger, Berlin, Germany.

258,039. *Measuring Bottle-Stopper.*—John J. Eastman, Media, Pa., assignor to Willmer L. Keller, Baltimore, Md. A bottle-stopper having at its inner or lower end a measuring extension, and an annular groove surrounding the base of the said extension.

258,140. *Instrument for Washing the Vagina.*—William B. Sims, St. Joseph, Ill.

258,420. *Corkscrew.*—Richard Kessel, Berlin, Germany.

258,428. *Process of Preparing Phosphoric Acid from Bones.*—William H. Hughes Johnson and Philip O'Rielly, Providence, R. I.

258,507. *Insecticide.*—George W. Tucker, Milwaukee, Wis., assignor to Clarence S. Brown, same place. Consists of honey, phosphorus, and rye-flour.

258,519. *Capsule Machine.*—Alfred Wood, Detroit, Mich.

258,579. *Bottle-Washing Machine.*—Konrad Hoffman, Cincinnati, Ohio, assignor of one-half to Albert V. Fuhrmann, Belleview, Ky.

258,652. *Process of Administering Anæsthetics.*—Sherman Cooper, Westfield, N. J., and Edward Dennis, Sing Sing, N. Y.; said Dennis assignor to Charles Hilbert, Sing Sing, N. Y.

258,841. *Process of Manufacture of Milk Sugar.*—Lewis H. Whitte, Cleveland, Ohio.

258,845. *Earthenware Liquid Measure.*—John W. Young, East Liverpool, Ohio, assignor of one-third to Wm. Brunt, Jr., same place.

258,890. *Machine for Capsuling Bottles.*—Chas. Cheswright, London, England.

259,026. *Manufacture of Oxides of Lead.*—George T. Lewis, Philadelphia, Pa.

256,070. *Medical Compound for Diphtheria.*—Henry Wisebaugh, Canton, Ohio. Consists of white-oak bark, cimicifuga racemosa, alum, borax, and water.

259,145 and 259,146. *Process of Treating Ammoniacal Liquors* and *Apparatus for Distilling Ammonia.*—Henry J. E. Hennebutte, Aught, and Charles J. F. R. de J.

Menard, Biarritz, France, assignors to Société Anonyme des Produits Chimiques du sud ouest, Paris, France.

259,150. *Process of Obtaining Magnesium Sulphate from Crude Mineral.*—Frederick Holweg, San Francisco, Cal.

259,364.—*Pill-Packing Box.*—Pierre Canhope, Detroit, Mich. A box, the bottom, sides, and ends of which are lined with gelatine subdivided into separate cells by means of division walls made of the same material.

259,365. *Process of and Die for Making Pill-Boxes.*—Pierre Canhope, Detroit, Mich., assignor to Parke, Davis & Co., same place. The process of forming the division-walls of chambers or cells gelatinous matter in boxes, by means of dies pressed into said gelatinous matter while in a soft condition.

259,590. *Remedy for Catarrh.*—Charles W. Schnell, Philadelphia, Pa., assignor to Charles W. Schnell & Co., same place. Consists of powdered borax, carbonate of soda, sugar, burnt alum, salt, saffron, blood-root, sassafras-root, and cubebs.

259,691. *Electrical Apparatus for Medical Purposes.*—William Hermans, Cambridgeport, Mass.

259,884. *Hair-Tonic.*—William E. Marold, Terre Haute, Ind. Consists of a filtered decoction, in water, of hop-root, grape-vine buds, and rosemary.

259,908. *Process of Obtaining Cyanides.*—Charles C. Parsons, and Edward F. Cruse, of New York, N. Y., assignors by direct and mesne assignments to Henry Bower, Philadelphia.

260,037. *Soda-Water Fountain.*—John Matthews, New York, N. Y.

260,140. *Remedy for Coughs.*—H. Joslin Turner, New York, N. Y. Consists of blood-root, hyoscyamus, squills, lobelia, capsicum, sassafras, uva ursi, and syrup, "to be used for coughs and all diseases of the throat, lungs, kidneys and urinary organs."

260,272. *Method of Putting up Caustic Alkali.*—Benjamin T. Babbit, New York, N. Y.

260,317, 260,318, and 260,319. *Acid, Neutral,* and *Basic Tannates of Chinoline.*—Wilhelm Pickhardt, New York, Herman Endeman, Brooklyn, N. Y., assignors to said Pickhardt and Adolf Kuttroff, New York, N. Y.

260,403. *Inhaler for Ether.*—Martin Matter, Chicago, Ill.

260,414. *Manner of Setting Retorts for Treating Sulphuric Acid.*—Albert Rappold and Ernst Leith, Titusville, Pa.

260,457. *Veterinary Drencher.*—John Z. Cooper, Athens, Ga.

260,486. *Process of Treating New Bone-Black, and of Revivifying Old Bone-Black.*—S. Morris Lillie, Philadelphia, Pa.

260,605. *Atomizer.*—Theodore E. Studley, New York, N. Y., assignor to the Goodyear Rubber Co., same place.

260,542. *Device for Expressing Stearic Acid, etc.*—George J. Dannecker, Cincinnati, Ohio.

260,561. *Vaccination Vesicle and Pustule Shield.*—David McC. French, Alexandria, Va.

260,583. *Fluid Ink.*—Jean Jacques Magne, Les Lilao, near Paris, France.

260,736. *Process of Separating Caustic Alkali from Gluin.*—Henry C. Becker, Chicago, Ill.

260,766. *Method of Charging Fountain with Aërated Beverages.*—John Matthews, New York, N. Y.

260,832.—*Mould for Alkali Balls.* Martin E. Brigham, Philadelphia, Pa.

261,068. *Mineral Water Fountain.*—Paul Dummer and Peter Malmeström, New York, N. Y., assignors to Carl H. Schultz, same place.

261,106. *Bottle Cleaner.*—Charles Vonderlinden, Rhinebeck, N. Y., assignor to himself and Lewis H. Livingston, Jr., same place.

261,250. *Bottle Stand and Reflector.*—B. Ockelmann, Jersey City, N. J.

261,315. *Flavoring Extract for Syrup and Sugar.*—Consists of any ordinary syrup or sugar, flavored with an extract of hickory.

261,330. *Pouring and Dropping Attachment for Bottles.*—George H. Freeman, New Bedford, Mass. The combination with the mouth of a bottle or analogous vessel N, of the sleeve C, by means of a cord or wire U; the sleeve having a lip L of a practically liquid-proof material, and the sleeve A of an absorbing substance.

261,400. *Inhaler.*—Mathieu Souvielle, Montreal, Quebec, Canada.

261,598. *Apparatus for Administering Medicated Baths.*—Max Goldberg, Milwaukee, Wis.

261,888. *Apparatus for Storing, Drawing, and Measuring Oils.*—Eli F. Wilder, Greenville, N. H.

10,172 (Reissue). *Stopper for Volatile Salts Bottle.*—Alonzo Hebbard, New York, N. Y.

262,317. *Liquid Measure.*—Christopher Riessner, New York, N. Y.

262,427. *Gas-proof Cement.*—Walter M. Jackson, Providence, R. I. Consists of glycerin, gelatin, and litharge or yellow oxide of lead.

262,457. *Compound for Treatment of Neuralgia.*—Henry Francis Mills, London, England. Consists of a mixture of water, hops, camphor, and salammoniac.

262,597. *Process of Making Surgical Jackets.*—Wm. H. Johnstone, Philadelphia, Pa.

262,613. *Corkscrew.*—Joseph Pitt, Brooklyn, N. Y., assignor of one-half to Truman P. Doane, same place.

262,744. *Medicinal Compound.*—Theodore Cornwell, Cortland, N. Y. Consists of cider-brandy, soft water, phosphoric acid or solution of acid phosphates, sugar syrup, and essence or extract of orange peel.

262,767. *Apparatus for Manufacturing Soda by the Ammonia Process.*—Henry J. E. Kennebutte, Aught, assignor to the Societé Anonyme des Produits Chimiques du sud-ouest, Paris, France.

262,913. *Distillation of Glycerin and Apparatus Connected Therewith.*—François Aunaudy, Saint Fons, France.

262,962. *Compressible Piston.*—George W. Lutz, Indianapolis, Ind. Applied to hypodermic syringes.

262,966. *Pendulum Scales.*—John B. Martin, Cincinnati, Ohio.

263,023. *Machines for Bottoming Vials.*—Edward Connolly, Hoboken, N. J.

263,128. *Inhaler.*—James A. Donaldson, Greenville, Pa.

263,508. *Writing Ink.*—Oliver A. Gould, Boston, Mass., assignor to the United States Indelible Ink Co., same place. One pint of extract of hemlock bark, one gill of alcohol, one ounce of nitrate of iron, one quarter-ounce of prussiate of potassium.

263,553. *Atomizer.*—Morris Mattson, New York, N. Y.

263,614. *Means for Dispensing Effervescent Liquids.*—Rinaldo R. Stafford, Port Richmond, N. Y., assignor of one-half to George H. Dobbin, same place.

263,649. *Thermometer.*—Adolph Bayer, New York, N. Y.

10,189 (Reissue). *Thermometer.*—Luigi Peroni, 45 Hatton Garden, Holborn, assignor to James Joseph Hicks, 8 Hatton Garden, County of Middlesex, England.

260,377. *Machine for Boring Brush-Handles.*—Allanson C. Estabrook, Florence, Mass., assignor to Florence Manufacturing Co., same place.

American Pork in France.—Our readers will remember the hysterical action of the authorities, not long since, regarding the exclusion of American pork from French markets. It now appears that the custom-house inspection of Chicago "sides" and "middles" has relaxed, owing to the conviction that there is less danger from American pork than from European supplies. Referring to the subject of meat inspection, M. Tirard, the Minister of Commerce, recently stated in the Senate that he should require 10,000 inspectors with microscopes to effect as thorough an examination as some desired.

ITEMS.

Erie County Pharmaceutical Association.—At the annual meeting of the Erie County (N. Y.) Pharmaceutical Association, held August 7th, the following officers were elected for the ensuing year: *President*, Julius Rieffenstahl; *First Vice-President*, R. K. Smither; *Second Vice-President*, A. C. Anthony; *Secretary*, Horace P. Hayes; *Treasurer*, C. M. Lyman; *Board of Examiners*, C. O. Rano, Philip Ruhles, Theo. Sage.

The following resolution was adopted:

Whereas, A proposed "Pharmacy Act" has been prepared under the auspices of the N. Y. State Pharmaceutical Association, and designed to regulate in a salutary manner the practice of pharmacy and the sale of poisons throughout the State, and

Whereas, Said bill has from its inception had the hearty support of this Association;

Whereas, Said bill has been presented to two successive legislatures, and has through lack of accord in the various sections of the State failed to become a law; and

Whereas, Similar, if not equal, advantages to the public and the profession may be obtained by a local law; therefore,

Resolved, That this Association again records its hearty approval of said act, and pledges its active co-operation in any attempt that may be made to obtain its passage by the Legislature of 1883.

Resolved, However, that while we will do nothing that will jeopard the interests of an act applying uniformly to the whole State; yet, in case this is again unsuccessful, we should then be prepared to ask for a similar act affecting Erie Co. only;

Resolved, That a committee of five be appointed by the members of the Association, who shall draft a bill adapted to operate in this County only, but embodying the desirable features of the aforesaid State act. Such committee to report said modified bill to this Association; also to recommend the most feasible system of enlisting our representatives in its passage in case the State bill should again appear likely to fail. HORACE P. HAYES.

Alumni Association of the Massachusetts College of Pharmacy.—A regular meeting of the Association was held at the College hall, August 31st, 1882. The regular business of the evening was followed by a collation, after which Mr. Davidson called the attention of those present to samples of the oleates of lead, bismuth, copper, and other oleates in the form of powder. He explained his method of preparing them, and their advantage over the ordinary oleates. Prof. Babcock spoke of the chemistry of oleates in general, and Prof. Bolles of their therapeutic value.

Illinois Druggists' Industrial Exposition.—In connection with the forthcoming meeting of the Illinois Pharmaceutical Association, to be held in Chicago, commencing on the 10th of October next, arrangements have been perfected for a commercial exhibit on a scale of unusual magnitude. The Exposition Hall in the First Regiment Armory Building has been secured, with an area of over 6,000 square feet, and every advantage for an extensive and attractive exhibit. Full particulars will shortly be given the trade through special circular.

WM. M. DALE,
Local Secretary.

General Henry T. Kiersted, of New York, whose death took place on the 13th of September, was born in New York in 1793. He was educated in the school of the Dutch Reformed Church, in Garden street, now Exchange place. He was graduated from this school in 1808, and in 1814 he entered the drug business at Pine street and Broadway. A short time after, he was drafted into the army, and served at the block-house now in Central Park. On leaving the army, he again entered the drug business, and was subsequently enrolled among the State militia. In 1826 he was appointed colonel of the 75th Regiment, and became, successively, brigadier-general in 1836 and major-general in 1844. In 1830, he was elected collector of taxes in the Eighth Ward, and when that office was abolished, he was appointed receiver of taxes for the city. In 1845, he was appointed cashier of the Custom House. At the beginning of the Mexican war, he organized two regiments. He was one of the founders of the New York College of Pharmacy, and in 1860–61 was the President of the American Pharmaceutical Association.

Prize in Pharmacy.—Among the subjects declared by the Medical Institutes at Valencia, Spain, to be open for competition, is A Practical Method of Estimating the Percentage of Active Principles Present in Medicinal Extracts. The prize consists of a gold medal and honorary membershiy of the Society. Intending competitors should address the Secretary of the institute at Valencia.

A New Medical Dictionary.—A new English dictionary of terms used in medicine has long been much needed. It will, therefore, be of interest to many that Messrs. Longman, of London, announce for publication early in October, a volume of over 1,800 pages, which has been in course of preparation for several years. More than two hundred persons have contributed to the work, and by a special arrangement the editor has been enabled to revise the earlier sheets, so as to bring the whole work down to the latest date.

Dr. Robert McNutt has been elected Professor of Botany in the Iowa College of Pharmacy.

PHARM. CALENDAR FOR OCTOBER.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Mon. 2d.	Erie Co. Pharm. Asso.—Meet. at Buffalo.
	Pittsburgh Coll. Pharm.—Quart. Meet.
	National Coll. Pharm.—Meet.
Tues. 3d.	Philadelphia Coll. Pharm.—Trustees' M.
	Davenport (Iowa) Pharm. Assoc.—Quart. Meet.
	Maryland Coll. Pharm.—Trustees' Meet.
	Chicago Coll. Pharm.—Semi-annual Meet.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Wed. 4th.	Rhode Island Pharm. Assoc.—Quart. Meet.
Thurs. 5th.	New York Coll. Pharm.—Trustees' Meet.
	Louisville Coll. Pharm.—Pharm. Meet.
	Massachusetts Coll. Pharm.—Trustees' Meet.
	Philadelphia Coll. Pharm.—Alumni Meet.
Frid. 6th.	American Chem. Soc.—Monthly Meeting at New York.
Tues. 10th.	Pittsburgh Coll. Pharm.—Trust. Meet.
	Chicago Coll. Pharm.—Trust. Meet.
	Massachusetts Coll. of Pharmacy.—Pharm. Meet.
	Kings Co. Pharmaceutical Soc.—Meets at Brooklyn.
	National. Coll. Pharm.—Meet.
Wed. 11th.	Cincinnati Coll. Pharm.—Trust. Meet., etc.
	New York Coll. Pharm.—Alumni Meet.
Thurs. 12th.	Newark Pharm. Asso.—Meet.
	California Pharm. Soc. and Coll. of Pharm.—Quart. Meet.
	Louisville Coll. Pharm.—Direct. Meet.
	Philadelphia Coll. Pharm.—Alumni Ph. M.
	Maryland Coll. Pharm.—Meet.
	New York German Apoth. Society.—Meet.
Tues. 17th.	St. Louis Coll. Pharm.—Trust. & Alumni M.
	Philadelphia Coll. Pharm.—Pharm. Meet.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Tues. 24th.	Boston Druggists' Assoc.—Meet.
Thurs. 26th.	Kings Co. Board of Pharm.—M. at Brooklyn.